

Engineering Evaluation/Cost Analysis for the 200-MG-1 Operable Unit Waste Sites

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management



**United States
Department of Energy**
P.O. Box 550
Richland, Washington 99352

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Release Approval

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Date

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EXECUTIVE SUMMARY

This document presents the results of a non-time-critical removal action engineering evaluation/cost analysis (EE/CA) addressing disposition of contaminated soil and other materials from waste sites contained in the Hanford Site 200-MG-1 Operable Unit (OU). This EE/CA was prepared in accordance with the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*¹ (CERCLA). The 200-MG-1 OU includes 194 waste sites in the 200 East and 200 West Areas, hereafter referred to as the “200 Area,” and in the outer area of the Central Plateau. The waste sites include trenches, cribs, pits, ditches, and other areas of shallow contamination (generally less than 4.6 m [15 ft] deep). They also include sites where chemical and radioactive contaminants were released during material transfers (i.e., unplanned release sites). Some sites were produced by airborne dissemination of radioactive particles, or dispersal through plant or animal fecal material. The terms “contamination” or “contaminant,” as used in this document, refer to the presence of contaminants of potential concern that exist above removal action levels.

The U.S. Department of Energy (DOE) has determined that the 200-MG-1 OU waste sites have the potential for release of CERCLA hazardous substances, and that a non-time-critical removal action, pursuant to authority delegated under Executive Order 12580, *Superfund Implementation*,² and Section 7.2.4 of Ecology et al., 1989a, *Hanford Federal Facility Agreement and Consent Order Action Plan*,³ is warranted to mitigate the threat of release.

The purpose of this EE/CA is to evaluate removal action alternatives to mitigate threats to human health and the environment posed by the contaminated soil and other materials in the 200-MG-1 OU. Typically, an EE/CA focuses on a single site or facility after a site investigation and considers a range of alternatives in the evaluation. This EE/CA supports removal action decisions for a large number of waste sites for which little characterization information is available.

¹ *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, 42 USC 9601, et seq.

² Executive Order 12580, 1987, *Superfund Implementation*, Ronald Reagan, January 23.
<http://www.archives.gov/federal-register/executive-orders/1987.html>

³ Ecology, EPA, and DOE, 1989a, *Hanford Federal Facility Agreement and Consent Order Action Plan*, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington. <http://www.hanford.gov/?page=117&parent=92>

Because the waste sites in this OU are shallow and simple, removal actions would effectively remove the contaminant exposure pathway to human and environmental receptors. This EE/CA evaluates the following four removal action alternatives for each site:

- No action (NA)
- Maintain existing soil cover/institutional controls/ monitored natural attenuation (MESC/IC/MNA)
- Confirmatory sampling/no further action (CS/NFA) for this removal action
- Removal, treatment, and disposal (RTD).

The NA alternative provides a baseline assumption that waste sites pose no current or potential threat to human health or the environment. The MESC/IC/MNA alternative uses the natural attenuation processes to evaluate lower contaminant concentrations, while relying on institutional controls of the area to prevent migration of the contaminants and exposure to receptors. The CS/NFA alternative assumes that the waste site does not presently pose a threat to human health and the environment, and sampling and analysis will be conducted to confirm that no further action is required. Finally, the RTD alternative includes removal and disposal of the soil and other materials, with treatment as required for disposal.

The anticipated final remedy for several 200-MG-1 OU waste sites is capping under a barrier that will remediate a larger nearby facility. Such sites will be maintained in a safe condition until the barrier is built. However, if these waste sites are determined to be a near term threat, RTD may be implemented as directed by DOE's on scene coordinator. It is not anticipated that any of these waste sites is a threat to groundwater. The DOE, U.S. Environmental Protection Agency, and Washington State Department of Ecology are developing a Central Plateau remediation strategy, and this removal action will be consistent with the final remedy.

After summarizing site characteristics, providing a site description, and establishing removal action objectives, these alternatives were evaluated in terms of effectiveness, implementability, and cost.

The preferred alternative for each waste site is recommended based on its overall ability to protect human health and the environment and its effectiveness in maintaining protection for both the short and the long term. These alternatives reduce the potential for further releases to

the environment; provide the best balance of protecting the health of the workers and the public; protect the environment; and provide an end state that is consistent with future cleanup actions and commitments of Ecology et al., 1989b, *Hanford Federal Facility Agreement and Consent Order*.⁴ This report provides the basis for these recommendations, including a detailed analysis of how well each alternative meets the CERCLA removal action evaluation criteria. The final remedial action selected for the 200-MG-1 OU waste sites will be submitted for public review in a proposed plan and documented in a record of decision.

This report provides the summary of preferred removal actions for all sites and contingency plans if the site preferred alternative is determined to be inappropriate during the removal action. Table ES-1 summarizes the present worth costs of the preferred removal actions across all waste sites. The 200-MG-1 OU preferred removal actions have a present worth cost of \$119,497,000.

Table ES-1. Summary of the 200-MG-1 Operable Unit Waste Site Preferred Removal Actions.

Preferred Alternative	Number of Waste Sites	Present Worth
NA	0	\$0
MESC/IC/MNA	0	\$0
CS/NFA	91	\$29,695,000
RTD	103	\$89,802,000
Total	194	\$119,497,000

CS/NFA = confirmatory sampling/no further action.

MESC/IC/MNA = maintain existing soil cover/institutional controls/monitored natural attenuation.

NA = no action.

RTD = removal, treatment, and disposal.

⁴ Ecology, EPA, and DOE, 1989b, *Hanford Federal Facility Agreement and Consent Order*, 2 vols., as amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington. <http://www.hanford.gov/?page=91&parent=0>.

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TERMS

ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
CFR	<i>Code of Federal Regulations</i>
COPC	contaminant of potential concern
CS/NFA	confirmatory sampling/no further action
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
MESC/IC/MNA	maintain existing soil cover/institutional controls/monitored natural attenuation
NA	no action
NEPA	<i>National Environmental Policy Act of 1969</i>
NPL	“National Priorities List” (40 CFR 300, Appendix B)
OU	operable unit
RAL	removal action levels
RAO	removal action objective
RAWP	removal action work plan
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
REDOX	Reduction-Oxidation (Plant or process)
RTD	removal, treatment, and disposal
Tri-Parties	U.S. Department of Energy, U.S. Environmental Protection Agency, and Washington State Department of Ecology
Tri-Party Agreement	Ecology et al., 1989b, <i>Hanford Federal Facility Agreement and Consent Order</i>
Tri-Party Agreement Action Plan	Ecology et al., 1989a, <i>Hanford Federal Facility Agreement and Consent Order Action Plan</i>
TMV	toxicity, mobility, or volume
UNH	uranyl nitrate hexahydrate
UPR	unplanned release
WAC	<i>Washington Administrative Code</i>

METRIC CONVERSION CHART

Into Metric Units			Out of Metric Units		
<i>If you know</i>	<i>Multiply by</i>	<i>To get</i>	<i>If you know</i>	<i>Multiply by</i>	<i>To get</i>
Length			Length		
inches	25.40	millimeters	millimeters	0.0394	inches
inches	2.54	centimeters	centimeters	0.394	inches
feet	0.305	meters	meters	3.281	feet
yards	0.914	meters	meters	1.094	yards
miles (statute)	1.609	kilometers	kilometers	0.621	miles (statute)
Area			Area		
sq. inches	6.452	sq. centimeters	sq. centimeters	0.155	sq. inches
sq. feet	0.0929	sq. meters	sq. meters	10.764	sq. feet
sq. yards	0.836	sq. meters	sq. meters	1.196	sq. yards
sq. miles	2.591	sq. kilometers	sq. kilometers	0.386	sq. miles
acres	0.405	hectares	hectares	2.471	acres
Mass (weight)			Mass (weight)		
ounces (avoir)	28.349	grams	grams	0.0353	ounces (avoir)
pounds	0.453	kilograms	kilograms	2.205	pounds (avoir)
tons (short)	0.907	ton (metric)	ton (metric)	1.102	tons (short)
Volume			Volume		
teaspoons	5	milliliters	milliliters	0.034	ounces (U.S., liquid)
tablespoons	15	milliliters	liters	2.113	pints
ounces (U.S., liquid)	29.573	milliliters	liters	1.057	quarts (U.S., liquid)
cups	0.24	liters	liters	0.264	gallons (U.S., liquid)
pints	0.473	liters	cubic meters	35.315	cubic feet
quarts (U.S., liquid)	0.946	liters	cubic meters	1.308	cubic yards
gallons (U.S., liquid)	3.785	liters			
cubic feet	0.0283	cubic meters			
cubic yards	0.764	cubic meters			
Temperature			Temperature		
Fahrenheit	$(^{\circ}\text{F}-32)*5/9$	Centigrade	Centigrade	$(^{\circ}\text{C}*9/5)+32$	Fahrenheit
Radioactivity			Radioactivity		
picocurie	37	millibecquerel	millibecquerel	0.027	picocurie

1.0 INTRODUCTION

This chapter discusses the purpose and scope of this document. This discussion is followed by sections that describe the document's organization, background to the 200-MG-1 Operable Unit (OU) with a list of its sites, a regulatory overview, and the approach to OU removal actions.

1.1 PURPOSE AND SCOPE

This document presents the results of a *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) non-time-critical removal action engineering evaluation/cost analysis (EE/CA) conducted to evaluate removal action alternatives for the 200-MG-1 OU waste sites. These waste sites are in the 200 East and 200 West Areas of the Hanford Site, hereafter referred to as the "200 Area," and in the outer area of the Central Plateau (Figure 1-1). Typically an EE/CA focuses on a single site or facility. In contrast, this EE/CA is being used to support removal action decisions for a large number of waste sites.

Final remedial decisions for the 200-MG-1 OU have not been made. The anticipated final remedy for several 200-MG-1 OU waste sites is capping under a barrier that will remediate a larger nearby facility. Such sites will be maintained in a safe condition until the barrier is built. These waste sites likely are not a threat to groundwater. The U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), and Washington State Department of Ecology (Ecology), collectively called the Tri-Parties, are developing a Central Plateau remediation strategy, and this removal action will be consistent with the anticipated final remedy. Some of the sites have been characterized and found to contain CERCLA hazardous substances⁵ that pose a threat to human health and the environment. Because most of the sites have not been characterized and may contain hazardous substances, removal actions that include characterization are warranted before final remedial decisions can be documented.

This EE/CA identifies the objectives of the removal actions⁶ and analyzes the removal action alternatives in terms of cost, effectiveness, and implementability for the 200-MG-1 OU waste sites. Figure 1-2 depicts the 200-MG-1 OU waste sites in the 200 Area and Figures 1-3 and 1-4 show the sites located within the 200 East and 200 West Areas, respectively. The alternatives considered provide a range of potential response actions that are appropriate to address site-specific conditions.

The DOE and Ecology will use this report as the basis for selecting removal actions to mitigate potential risks to human health and the environment. This EE/CA also will be presented to the public for review and comment. An action memorandum, which will document and authorize

⁵ "Hazardous substances" are defined in 40 CFR 300.5, "Definitions," and include both radioactive and chemical substances.

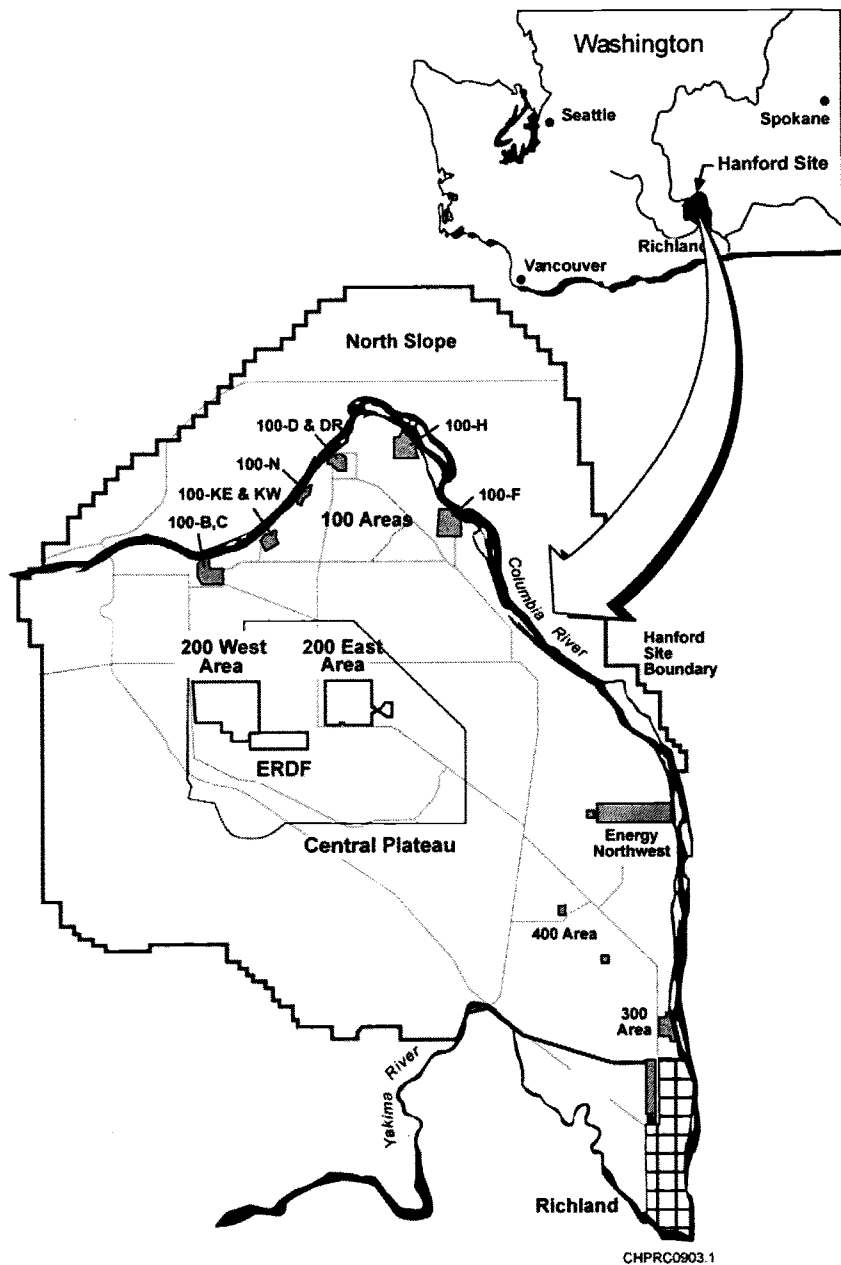
⁶ 40 CFR 300.5 defines "remove" or "removal" as follows:

"...the cleanup or removal of released hazardous substances from the environment; such actions as may be necessary taken in the event of the threat of release of hazardous substances into the environment; such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances; the disposal of removed material; or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare of the United States or to the environment, which may otherwise result from a release or threat of release."

implementation of the removal actions for each waste site, will be developed from this EE/CA. A removal action work plan (RAWP) will be prepared to document the removal action decision(s), removal action levels (RALs), and removal action methods.

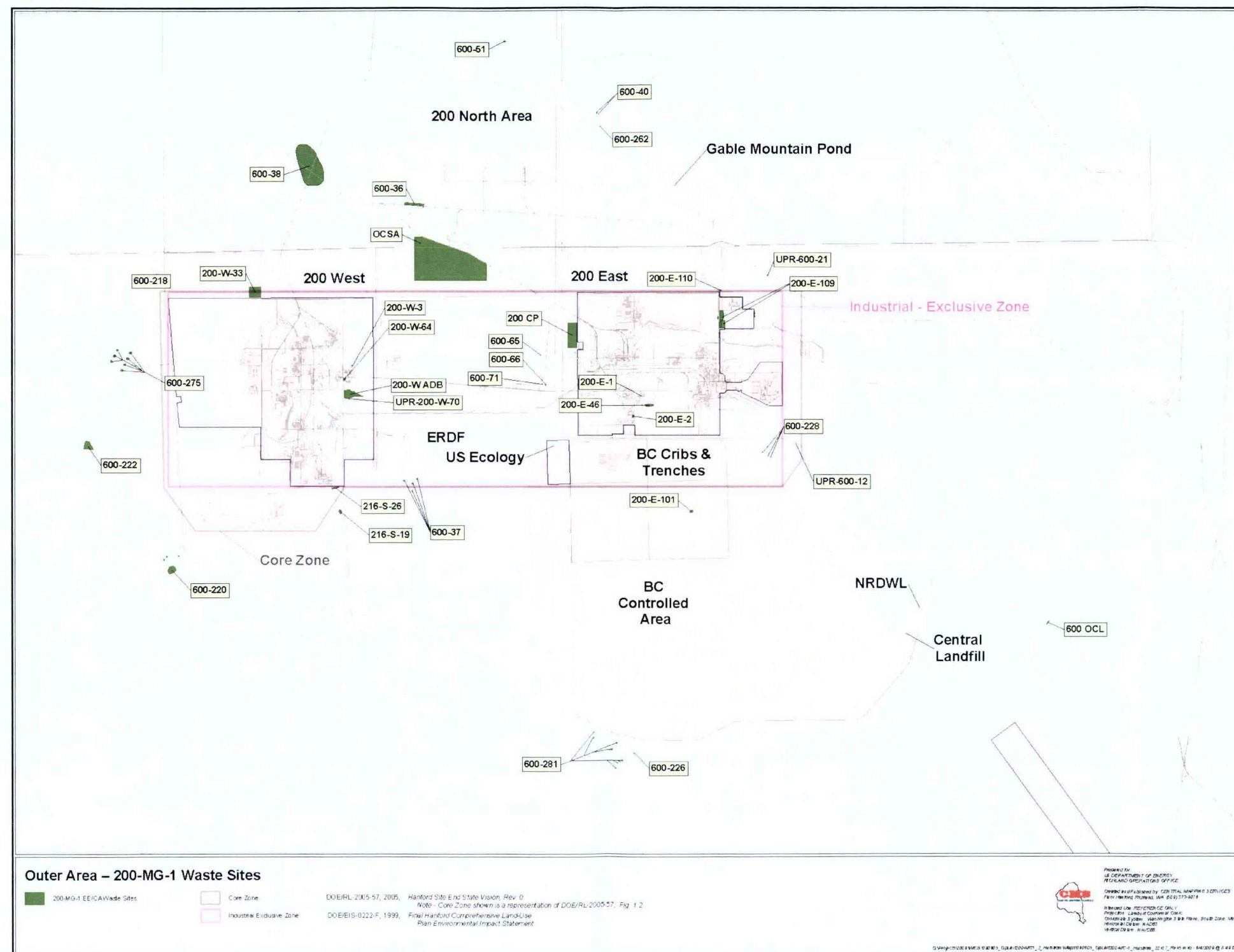
The final remedial action selected for the 200-MG-1 OU waste sites will be submitted for public review in a proposed plan and documented in a record of decision.

Figure 1-1. Location of the Hanford Site in Washington State.



ERDF = Environmental Restoration Disposal Facility.

Figure 1-2. 200-MG-1 Operable Unit Waste Sites – Outer Area.



NRDWL = Nonradioactive Dangerous Waste Landfill.

Figure 1-3. 200-MG-1 Operable Unit Waste Sites – 200 East Area.

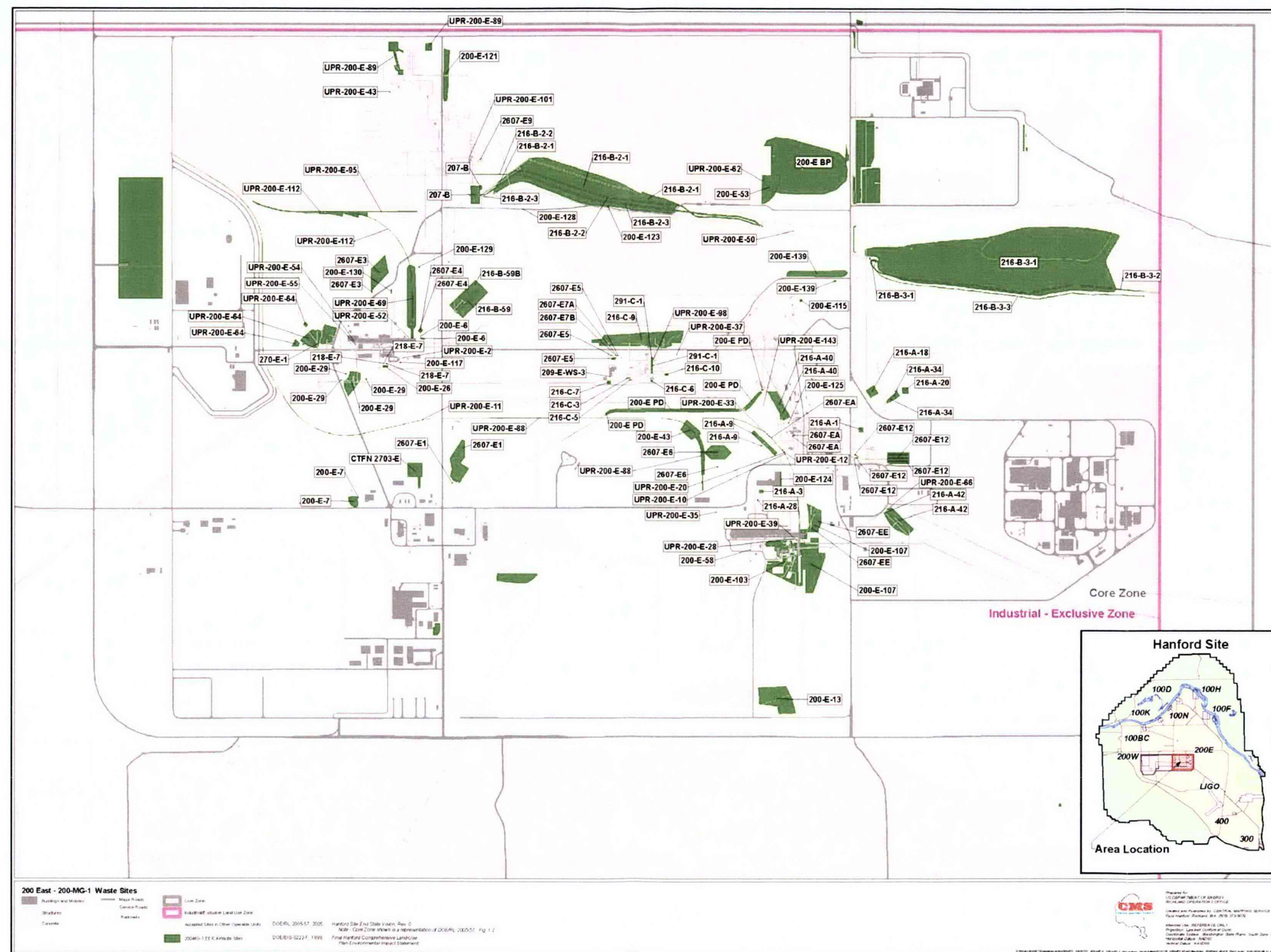
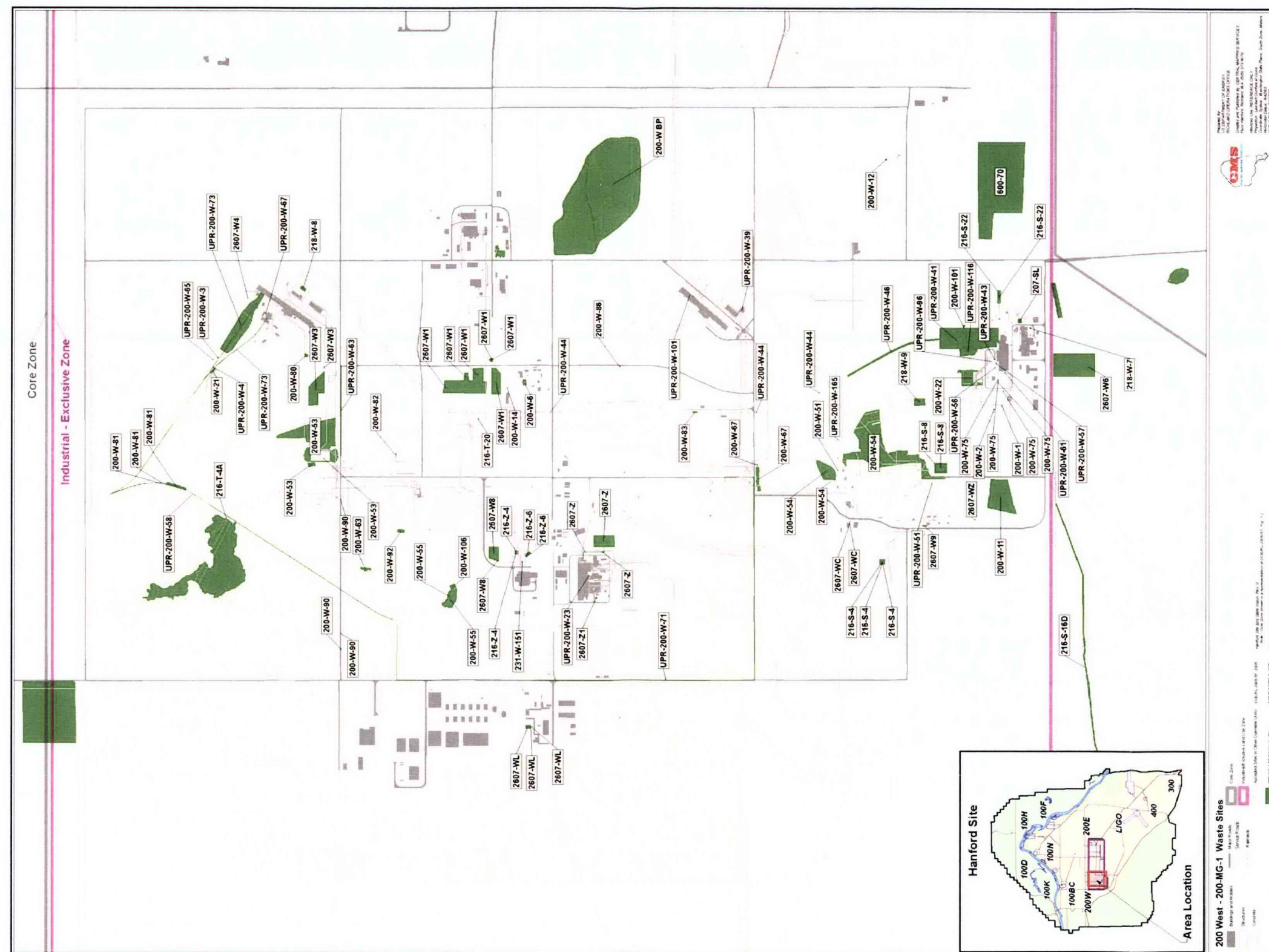


Figure 1-4. 200-MG-1 Operable Unit Waste Sites – 200 West Area.



1.2 REPORT ORGANIZATION

This document is organized into seven chapters as indicated below.

- Chapter 1.0, Introduction. Provides the purpose, scope, background information on 200 Area characteristics, waste site history, and overall removal action approach.
- Chapter 2.0, Site Characterization. Provides an overview of the waste sites, the waste site profiles, the waste sources, the nature and extent of contamination, and risk evaluation.
- Chapter 3.0, Removal Action Objectives (RAOs) and RALs. Provides the removal action scope and purpose, justification for the proposed action, and RALs.
- Chapter 4.0, Discussion of Alternatives. Provides a description of the alternatives.
- Chapter 5.0, Analysis of Alternatives. Provides the individual analysis of alternatives, comparative analysis of alternatives, and preferred removal actions.
- Chapter 6.0, Conclusions and Recommended Alternatives. Provides the summary of preferred removal actions and the removal action contingency plans.
- Chapter 7.0, References.

In addition, four appendices support these analyses.

- Appendix A, Waste Site Summary. Includes brief summaries of waste sites and their characteristics with photos and schematics of each site. References for the information are included for each waste site.
- Appendix B, Waste Site Attributes. Provides a comparative overview of the waste site information in a tabular summary form used in developing the preferred site removal actions.
- Appendix C, Applicable or Relevant and Appropriate Requirements (ARAR). Includes description of the chemical-, location-, and action-specific ARARs and to-be-considered advisories for the OU.
- Appendix D, Present-Worth Cost Summary. Includes a summary of the costs of each preferred alternative for each waste site.

A separate document (SGW-38383, *Cost Estimate for the 200-MG-1 Operable Unit Engineering Evaluation/Cost Analysis Removal Actions*) includes cost estimates and summary tables of primary cost components for each site, with summaries of assumptions and waste site parameters.

1.3 BACKGROUND

The Hanford Site encompasses approximately 1,517 km² (586 mi²) in the Columbia River Basin of south-central Washington state (Figure 1-1). In 1989, the EPA placed the 100, 200, 300, and 1100 Areas of the Hanford Site on the 40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan" Appendix B, "National Priorities List" (NPL), pursuant to CERCLA. The 200 Area NPL site contains 200 East and 200 West Areas, which include waste management facilities and inactive irradiated fuel-reprocessing facilities, and the 200 North Area, formerly used for interim storage and staging of irradiated fuel.

The 200-MG-1 OU consists of 194 waste sites according to Appendix C of Ecology et al., 1989a, *Hanford Federal Facility Agreement and Consent Order Action Plan* (Tri-Party Agreement Action Plan). A waste-site tracking record (SGW-38577, *200-MG-1 and 200-MG-2 Operable Units Waste Sites Tracking Record*) has been included in the Administrative Record to facilitate assignment tracking of the 200-MG-1 OU waste sites.

The 194 sites addressed by this EE/CA were evaluated against the removal action alternative criteria in this EE/CA and are listed in Table 1-1. These waste sites contain shallow contamination or contamination that presents a threat to human health and the environment and can be easily removed via a CERCLA removal action. The DOE and Ecology agreed that decision making is straight-forward and that supplemental data are not required before selecting a cleanup alternative. These sites are likely candidates for at least one of the following removal actions:

- No action (NA)
- Maintain existing soil cover/institutional controls/monitored natural attenuation (MESC/IC/MNA)
- Confirmatory sampling/no further action (CS/NFA)
- Removal, treatment, and disposal (RTD).

These alternatives are discussed further in Section 1.5.1 and in Chapter 4.0.

The waste sites include trenches, cribs, pits, ditches, and other areas of shallow contamination. Shallow contamination is not expected to extend nominally more than 4.6 m (15 ft) below ground surface (bgs). The sites also include areas where chemical and radioactive contaminants were released during material transfers (i.e., unplanned release [UPR] sites). Some sites were produced by airborne dissemination of radioactive particles, or dispersal through plant or animal fecal material. The 200-MG-1 OU waste sites are generally small-volume sites with low levels of radiological and/or chemical contamination. In this EE/CA, the word "contamination" means the expected or known presence of at least one contaminant of potential concern (COPC), developed in Section 2.4.2, at a concentration that is greater than its RAL. The terms "contaminant" and "COPC" are used interchangeably within this document.

Previous partial cleanup actions, including placement of clean soil interim stabilization covers, have been implemented at some of the sites.

All of the waste sites contained in the 200-MG-1 OU are located within the Central Plateau, as defined in DOE/EIS-0222-F, *Final Hanford Comprehensive Land Use Plan Environmental Impact Statement*, and are inside and outside the Core Zone as defined in DOE/RL-2005-57, *Hanford Site End State Vision*. Figure 1-1 shows the boundary of the Industrial-Exclusive Zone around the 200 Area. DOE/EIS-0222-F defines the land use for the Central Plateau outside the Industrial-Exclusive Zone as Conservation/Mining.

Table 1-1. 200-MG-1 Operable Unit Waste Sites Evaluated in the Engineering Evaluation/Cost Analysis. (4 Pages)

Waste Site Code	Waste Site Type	Waste Site Code	Waste Site Type	Waste Site Code	Waste Site Type
200 CP	Depression/Pit (nonspecific)	216-A-20	Trench	2607-W1	Septic System
200-E BP	Burn Pit	216-A-28	Crib	2607-W3	Septic System
200-E PD	Ditch	216-A-34	Ditch	2607-W4	Septic System
200-E-1	Dumping Area	216-A-40	Retention Basin	2607-W6	Septic System
200-E-2	Unplanned Release	216-A-42	Retention Basin	2607-W8	Septic System
200-E-6	Septic System	216-B-2-1	Ditch	2607-W9	Septic System
200-E-7	Septic System	216-B-2-2	Ditch	2607-WC	Septic System
200-E-13	Dumping Area	216-B-2-3	Ditch	2607-WL	Septic System
200-E-26	Unplanned Release	216-B-3-1	Ditch	2607-WZ	Septic System
200-E-29	Unplanned Release	216-B-3-2	Ditch	2607-Z	Septic System
200-E-43	Storage	216-B-3-3	Ditch	2607-Z1	Septic System
200-E-46	Dumping Area	216-B-59	Trench	Chemical Tile Field North (CTFN) 2703-E	Drain/Tile Field
200-E-53	Unplanned Release	216-B-59B	Retention Basin	Old Central Shop Area (OCSA)	Foundations
200-E-58	Neutralization Tank	216-C-3	Crib	UPR-200-E-2	Unplanned Release
200-E-101	Experiment/Test Site	216-C-5	Crib	UPR-200-E-10	Unplanned Release
200-E-103	Unplanned Release	216-C-6	Crib	UPR-200-E-11	Unplanned Release
200-E-107	Unplanned Release	216-C-7	Crib	UPR-200-E-12	Unplanned Release
200-E-109	Unplanned Release	216-C-9	Pond	UPR-200-E-20	Unplanned Release

Table 1-1. 200-MG-1 Operable Unit Waste Sites Evaluated in the Engineering Evaluation/Cost Analysis. (4 Pages)

Waste Site Code	Waste Site Type	Waste Site Code	Waste Site Type	Waste Site Code	Waste Site Type
200-E-110	Dumping Area	216-C-10	Crib	UPR-200-E-28	Unplanned Release
200-E-115	Unplanned Release	216-S-4	French Drain	UPR-200-E-33	Unplanned Release
200-E-117	Unplanned Release	216-S-8	Trench	UPR-200-E-35	Unplanned Release
200-E-121	Unplanned Release	216-S-16D	Ditch	UPR-200-E-37	Unplanned Release
200-E-123	Unplanned Release	216-S-19	Pond	UPR-200-E-39	Unplanned Release
200-E-124	Unplanned Release	216-S-22	Crib	UPR-200-E-43	Unplanned Release
200-E-125	Unplanned Release	216-S-26	Crib	UPR-200-E-50	Unplanned Release
200-E-128	Unplanned Release	216-T-4A	Pond	UPR-200-E-52	Unplanned Release
200-E-129	Unplanned Release	216-T-20	Trench	UPR-200-E-54	Unplanned Release
200-E-130	Unplanned Release	216-Z-4	Trench	UPR-200-E-55	Unplanned Release
200-E-139	Unplanned Release	216-Z-6	Crib	UPR-200-E-62	Unplanned Release
200-W Ash Disposal Basin (ADB)	Coal Ash Pit	218-E-7	Burial Vault	UPR-200-E-64	Unplanned Release
200-W BP	Burn Pit	218-W-7	Burial Vault	UPR-200-E-66	Unplanned Release
200-W-1	Mud Pit	218-W-8	Burial Vault	UPR-200-E-69	Unplanned Release
200-W-2	Spoils Pile/Berm	218-W-9	Burial Ground	UPR-200-E-88	Unplanned Release
200-W-3	Dumping Area	231-W-151	Receiving Vault	UPR-200-E-89	Unplanned Release

Table 1-1. 200-MG-1 Operable Unit Waste Sites Evaluated in the Engineering Evaluation/Cost Analysis. (4 Pages)

Waste Site Code	Waste Site Type	Waste Site Code	Waste Site Type	Waste Site Code	Waste Site Type
200-W-6	Dumping Area	270-E-1	Neutralization Tank	UPR-200-E-95	Unplanned Release
200-W-11	Dumping Area	291-C-1	Burial Ground	UPR-200-E-98	Unplanned Release
200-W-12	Dumping Area	600 Original Central Landfill (OCL)	Sanitary Landfill	UPR-200-E-101	Unplanned Release
200-W-14	Dumping Area	600-36	Burn Pit	UPR-200-E-112	Unplanned Release
200-W-21	Pump Station	600-37	French Drain	UPR-200-E-143	Unplanned Release
200-W-22	Unplanned Release	600-38	Dumping Area	UPR-200-W-3	Unplanned Release
200-W-33	Dumping Area	600-40	Dumping Area	UPR-200-W-4	Unplanned Release
200-W-51	Septic System	600-51	Dumping Area	UPR-200-W-23	Unplanned Release
200-W-53	Unplanned Release	600-65	Dumping Area	UPR-200-W-39	Unplanned Release
200-W-54	Unplanned Release	600-66	Dumping Area	UPR-200-W-41	Unplanned Release
200-W-55	Dumping Area	600-70	Dumping Area	UPR-200-W-43	Unplanned Release
200-W-63	Unplanned Release	600-71	Burn Pit	UPR-200-W-44	Unplanned Release
200-W-64	Foundation	600-218	Dumping Area	UPR-200-W-46	Unplanned Release
200-W-67	Unplanned Release	600-220	Dumping Area	UPR-200-W-51	Unplanned Release
200-W-75	Experiment/Test Site	600-222	Military Compound	UPR-200-W-56	Unplanned Release
200-W-80	Spoils Pile/Berm	600-226	Dumping Area	UPR-200-W-57	Unplanned Release

Table 1-1. 200-MG-1 Operable Unit Waste Sites Evaluated in the Engineering Evaluation/Cost Analysis. (4 Pages)

Waste Site Code	Waste Site Type	Waste Site Code	Waste Site Type	Waste Site Code	Waste Site Type
200-W-81	Unplanned Release	600-228	Dumping Area	UPR-200-W-58	Unplanned Release
200-W-82	Pump Station/ Product Piping	600-262	Crib	UPR-200-W-61	Unplanned Release
200-W-83	Unplanned Release	600-275	Foundation	UPR-200-W-63	Unplanned Release
200-W-86	Unplanned Release	600-281	Dumping Area	UPR-200-W-65	Unplanned Release
200-W-90	Unplanned Release	2607-E1	Septic System	UPR-200-W-67	Unplanned Release
200-W-92	Dumping Area	2607-E3	Septic System	UPR-200-W-70	Unplanned Release
200-W-101	Dumping Area	2607-E4	Septic System	UPR-200-W-71	Unplanned Release
200-W-106	Unplanned Release	2607-E5	Septic System	UPR-200-W-73	Unplanned Release
207-B	Retention Basin	2607-E6	Septic System	UPR-200-W-96	Unplanned Release
207-SL	Retention Basin	2607-E7A	Septic System	UPR-200-W-101	Unplanned Release
209-E-WS-3	Valve Pit	2607-E7B	Septic System	UPR-200-W-116	Unplanned Release
216-A-1	Crib	2607-E9	Septic System	UPR-200-W-165	Unplanned Release
216-A-3	Crib	2607-E12	Septic System	UPR-600-12	Unplanned Release
216-A-9	Crib	2607-EA	Septic System	UPR-600-21	Unplanned Release
216-A-18	Trench	2607-EE	Septic System	--	--

1.4 REGULATORY OVERVIEW

This section contains an overview of the Hanford Site designation as NPL sites and of the manner in which CERCLA applies to these waste sites for the 200-MG-1 OU removal action. This section also summarizes regulatory and public involvement requirements.

All waste sites in the 200-MG-1 OU are on the 200 Area NPL and subject to cleanup action under CERCLA. These waste sites are identified in Appendix C of the Tri-Party Agreement Action Plan under 200-MG-1 OU as waste sites on the NPL. The removal actions being proposed for these waste sites will not interfere with the final remedial action decisions as required by 40 CFR 300.415(d), "Removal Action." The cleanup of these waste sites will consider both CERCLA remedial action and *Resource Conservation and Recovery Act of 1976* (RCRA) corrective action requirements and will be documented in a final record of decision. Activities undertaken for cleanup of these NPL sites are performed in accordance with 40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," and Ecology et al., 1989b, *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement).

1.4.1 Removal Action Authority

The President is given authority by Section 104 of CERCLA, when there is a threat to public health or welfare of the United States or to the environment, to take any appropriate removal action to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or the threat of release. This authority is delegated to the DOE, as CERCLA Lead Agency, through Executive Order 12580, *Superfund Implementation*. Expedited response actions are addressed by the Tri-Party Agreement Action Plan, Section 7.2.4, which cites and is consistent with Executive Order 12580.

This EE/CA was prepared in accordance with CERCLA and 40 CFR 300.415 as a proposal for a non-time-critical removal action (DOE/EH-143-9811, *Non-Time-Critical Removal Actions*). After the public has had an opportunity to comment on the alternatives and the recommended approach presented in this document, the DOE will issue an action memorandum to authorize the removal action.

1.4.2 Regulatory Involvement

Ecology is the lead regulatory agency for the 200-MG-1 OU. Ecology involvement will be in accordance with the Tri-Party Agreement, Section 7.2.4. Accordingly, Ecology concurrence will be sought for the action memorandum that will be prepared after this EE/CA process.

1.4.3 Stakeholder Involvement

Removal actions taken pursuant to this EE/CA will be conducted in compliance with the Ecology et al., 2002, *Hanford Site Tri-Party Agreement Public Involvement Community Relations Plan* and public participation requirements established in 40 CFR 300.415(n), "Community Relations in Removal Actions." This EE/CA will undergo a 30-day public comment period. After the public comment period, a written response to significant comments will be provided in accordance with 40 CFR 300.820(a), "Administrative Record File for a Removal Action."

1.5 APPROACH TO REMEDIATION

The remediation approach to the 200-MG-1 OU in part has been determined by the following:

- Removal action alternatives consistent with the logic behind the creation of this OU
- Preference for RTD, whenever practicable
- Extensive use of the observational approach because of limited site information; particularly for non-engineered structures (e.g., spills, UPRs, and windblown contamination) to support rapid changes to field implementation
- Procedure for easy addition of new sites to existing remedies (i.e., plug-in approach), as well as assignment of sites to other OUs if the waste sites do not fit the 200-MG-1 OU conceptual model or the removal actions alternatives.

The 200-MG-1 OU site removal action approach builds on the experience and processes obtained from DOE/RL-94-61, *100-KR-1 Operable Unit Focused Feasibility Study Report*, Appendix N, and DOE/RL-2004-39, *200-UR-1 Unplanned Release Waste Group Operable Unit Remedial Investigation/Feasibility Study Work Plan*. The methods discussed below are used in this EE/CA and removal action implementation, which is described in more detail in Chapter 6.0.

1.5.1 Removal Action Alternatives

Because the waste sites in this OU are shallow and simple removal efforts would effectively remove the contaminant exposure pathway to human and environmental receptors, the range of alternatives considered is limited. The 200-MG-1 OU removal action alternatives considered in this EE/CA are consistent with logic behind the creation of this OU, and include NA, MESC/IC/MNA, CS/NFA, and RTD. Sites determined to require other alternatives will be identified for transfer to other OUs.

The applicability of each removal action alternative is as follows.

- NA. This alternative applies to waste sites that pose no current or potential threat to human health or the environment.
- MESC/IC/MNA. This alternative may be appropriate for waste sites that contain an existing soil cover and only short-lived radionuclides that do not present an immediate endangerment to human health or the environment and that will attenuate to levels below RALs within 150 years.
- CS/NFA. This alternative may be used when empirical data indicate that RTD of the waste site is not required. Confirmatory sampling data will be collected to confirm that soil is at or below RALs, supporting the decision that no further action is required. If the results of CS indicate that the CS/NFA is inappropriate (i.e., > RALs), then the RTD action will be implemented or the waste site will be removed from this EE/CA and will be evaluated as part of the remaining 200-MG-1 OU.
- RTD. In this alternative, sampling and analysis confirm that soil contains contamination above RALs and requires removal. However, removal actions may be conducted without prior confirmation sampling, or where process knowledge and information are available to make this determination. Remove and dispose of soil and other materials above RALs

with treatment as required for disposal. Through verification sampling and analysis, demonstrate remaining in situ soils are at or below RALs.

In this alternative, contamination will be removed up to 4.6 m (15 ft), including contamination that may have migrated away from the original site, to levels at or below the established RALs. The RALs will be established in the RAWP. Excavated waste will be treated if necessary and disposed of at the Environmental Restoration Disposal Facility (ERDF). The RTD waste sites are typically shallow sites where the depth of contamination is not expected to extend nominally more than 4.6 m bgs. The depth is not restricted to 4.6 m, but that depth will be used as a general guideline for RTD waste sites. If the RALs are not met at 4.6 m, soil samples will be taken at depths greater than 4.6 m to characterize potential groundwater risk drivers. A decision matrix for determining the path forward in this situation will be included in the RAWP. This will include removal of soils, debris, and contaminated structures. In certain cases, using the observational approach, to depths slightly greater than 4.6 m bgs may be performed if necessary to reduce contaminants to levels below RALs, or as directed by the on scene coordinator. If results of CS indicate that the RTD is inappropriate (i.e., at or below RALs), then the CS/NFA action will be implemented.

The anticipated final remedy for several 200-MG-1 OU waste sites is capping under a barrier that will remediate a larger nearby facility. Such sites will be maintained in a safe condition until the barrier is built. However, if these waste sites are determined to be a near term threat, RTD may be implemented as directed by the on scene coordinator. These waste sites likely are not a threat to groundwater. The Tri-Parties are developing a Central Plateau remediation strategy, and this removal action will be consistent with the anticipated final remedy.

1.5.2 Plug-in Approach

The waste site remedy selection will be documented in the action memorandum. The "plug-in approach" has been developed to analyze removal alternatives for groups of sites with similar characteristics, designated as the site profile. The action memorandum will identify remedies on the basis of the site profiles. If it is determined that a new waste site(s) is sufficiently similar to, or compatible with, a site group for which the alternatives have already been developed and analyzed, then the site will "plug-in" to that group. Confirmatory sampling may be required to determine whether a particular waste site fits the criteria for plug-in. The plug-in approach eliminates the time and cost required to produce multiple, redundant site-specific EE/CAs (DOE/EH-413-9903, *The Plug-In Approach: A Generic Strategy to Expediting Cleanup*).

1.5.3 Removal Action Flexibility

An action memorandum will document preferred removal alternatives for the 200-MG-1 OU waste sites. The RAWP will detail anticipated work alternatives and define a sampling and analysis process. However, if the preferred removal alternative for a site (developed in Chapter 5.0) is found to be inappropriate during its implementation, then a different removal alternative will be chosen that is more appropriate to the site conditions through consultation with the DOE, Richland Operations Office and Ecology. This approach allows alternative removal actions to be implemented to best achieve site remediation. Section 6.2 presents the removal action decision-making approach.

1.5.4 Observational Approach

The observational approach is a method of planning, designing, and implementing a removal action that uses a limited amount of initial characterization data. Additional information gathered during removal actions will be used to make “real-time” decisions in the field to guide the direction and scope of removal actions, based on contingent planning. The observational approach in removal actions provides the flexibility in the field necessary to adapt the removal action to observed site conditions. Removal actions will proceed until it can be demonstrated through field screening and verification sampling that the RALs have been met. This method of streamlining is faster and more cost-effective than traditional approaches that require substantial site characterization and detailed planning before taking removal actions.

1.5.5 Prioritization

The implementation of the preferred removal actions for the 200-MG-1 OU waste sites will be prioritized in the RAWP. This prioritization may be based on several conditions, including the following:

- Expected contamination depth
- Location of a waste site inside or outside the 200 East and 200 West Area fence lines
- Proximity of a waste site to other waste sites or structures
- Ease of access to the waste site
- Potential integration of waste site removal action with other nearby site removal or remedial actions.

Prioritization of waste sites and coordination with other CERCLA response actions will be discussed regularly with Ecology.

2.0 SITE CHARACTERIZATION

This chapter contains the general background and site description, including the flora, fauna, climate, geology, and hydrogeology. This provides the available waste information and the waste site attributes, which are a compilation of information for the waste sites in the 200-MG-1 OU, including waste site history, physical characteristics (e.g., lateral dimensions and depth) and site types (e.g., UPRs, dumping areas, cribs, trenches, burn pits). The sources, nature, and extent of contamination, as well as a streamlined risk evaluation, also are provided.

2.1 BACKGROUND AND SITE DESCRIPTIONS

This section provides general background of the 200 Area, the sites, flora and fauna, climate, geology, and hydrogeology of the area.

2.1.1 General Description

The 200 Area was the center of activity for processing plutonium at the Hanford Site starting in the mid-1940s. Five general plant process groupings exist in the 200 Area, including fuel processing, plutonium isolation, uranium recovery, cesium/strontium recovery, and waste storage/treatment. Liquid wastes are considered the most significant type of discharge to the environment in terms of volume and numbers of constituents. Detailed information on the historical operations and waste generation mechanisms is provided in DOE/RL-2001-54, *Central Plateau Ecological Evaluation*. Waste sites types in the 200-MG-1 OU are discussed in Section 2.3.

2.1.2 Flora and Fauna

The 200 Area is a mature shrub-steppe ecosystem, dominated by sagebrush and Sandberg's bluegrass. The native shrub-steppe is interspersed with disturbed areas in which the primary vegetation is made up of annual grasses and forbs. Many sites in the 200 Area are covered with gravel or asphalt, or stabilized with non-native wheatgrass (DOE/RL-2001-54). Species of mammals common to the 200 Area include coyotes, Great Basin pocket mice, northern pocket gophers, and deer mice. The most widely distributed bird species are meadowlarks, horned larks, and mourning doves. Gopher snakes and side-blotched lizards are the main reptiles inhabiting the 200 Area. The most common groups of terrestrial invertebrates in these areas are darkling beetles, grasshoppers, and ants. DOE/RL-2001-54 presents a detailed account of the species of the 200 Area.

2.1.3 Climate

The Hanford Site lies east of the Cascade Mountains and has a semiarid climate caused by the rain shadow effect of the mountains. Climatological data are monitored at the Hanford Meteorological Station and other locations throughout the Hanford Site. From 1945 through 2001, the recorded maximum temperature was 45 °C (113 °F), and the recorded minimum temperature was -30.6 °C (-23 °F) (PNNL-6415, *Hanford Site National Environmental Policy Act (NEPA) Characterization*). The two extremes occurred during August and February, respectively. The monthly average temperature ranged from a low of -0.24 °C (31.7 °F) in January to a high of 24.6 °C (76.3 °F) in July. The annual average relative humidity is 54 percent.

Most precipitation occurs during late autumn and winter, with more than half of the annual amount occurring from November through February. Normal annual precipitation is 17.7 cm (6.98 in.). Because it typically receives less than 25.5 cm (10 in.) of precipitation a year, the climate is considered to be semiarid (PNNL-6415).

The prevailing wind direction at the Hanford Meteorological Station is from the northwest during all months of the year (PNNL-6415). Monthly average wind speeds are lowest during the winter months and average about 3 m/s (6 to 7 mi/h). The highest average wind occurs during the summer and is about 4 m/s (8 to 9 mi/h). The record wind gust was 35.7 m/s (80 mi/h) in 1972 (DOE/RL-2007-50, *Central Plateau Terrestrial Ecological Risk Assessment Report*).

2.1.4 Geology and Hydrogeology

The average depth from ground surface to groundwater beneath the 200 Area ranges from 50 m (164 ft) to greater than 100 m (328 ft). Additional details on the geology and hydrogeology underlying the 200 Area and the 200-MG-1 OU are not provided in this EE/CA because the 200-MG-1 OU waste sites are assumed not to be a threat to groundwater quality. This assumption is based on the volume of liquid discharged, lack of mobility of contaminants, and shallow depth of the discharge. In addition, the geological and hydrological conditions that exist beneath the 200 Area are well known and are described in a number of technical documents, (Lindsey, 1996, *The Miocene to Pliocene Ringold Formation and Associated Deposits of the Ancestral Columbia River System, South-Central Washington and North-Central Oregon*; PNL-5506, *Hanford Site Water Table Changes 1950 Through 1980, Data Observations and Evaluation*; PNNL-6415; PNNL-13116, *Hanford Site Groundwater Monitoring for Fiscal Year 1999*; PNNL-13641, *Uncertainty Analysis Framework – Hanford Site-Wide Groundwater Flow and Transport Model*; PNNL-14187, *Hanford Site Groundwater Monitoring for Fiscal Year 2002*; WHC-SD-ER-TI-003, *Geology and Hydrology of the Hanford Site - A Standardized Text for use in WHC Documents & Reports*).

The Tri-Parties created the 200-MG-1 OU through Tri-Party Agreement Milestone M-015-06-02 and Tri-Party Agreement Change Request C-06-02. If confirmation sampling or the observational approach shows that a site is more than a shallow contamination problem, the site will be reevaluated and other alternatives considered.

The radionuclide inventory for this conceptual model group does not include transuranic isotopes at or near the level of 100 nCi/g. Examples of 200-MG-1 OU waste sites are unplanned releases, shallow releases or leaks, and contamination spread by burrowing wildlife.

2.2 AVAILABLE WASTE SITE INFORMATION

The Waste Information Data System database was the primary source of site information for the 200-MG-1 OU. Because the 200-MG-1 OU waste sites previously had been part of other OUs, certain data-gathering activities and evaluations had been completed in conjunction with the prior OU activities for a few of the waste sites. Detailed waste site information is presented in Appendices A and B.

- Appendix A contains an information brief for each waste site, including the site history, its known or estimated dimensions and depth, assumptions concerning potential contaminants and their distribution, and references. Engineering diagrams, if available,

are included in each brief where a structure is a component of the waste site. The briefs contain current site photographs for many of the sites. The briefs also present the preferred remedy and estimated cost for the remedy for each waste site.

- Appendix B includes a large waste-site-summary table identifying primary attributes of the waste sites, organized by waste site type. These attributes were used in selecting preferred removal actions. This table permits a direct comparison of all similar waste sites, including their physical features, waste release mechanisms, potential contaminant types (i.e., radiological or nonradiological), and expected contaminant distribution.

Limited data exist for waste sites addressed in this EE/CA. However, two sites in the 200-MG-1 OU (216-B-2-2 and 216-B-3-3 Ditches) previously were characterized as representative waste sites while assigned to the 200-CW-1 OU.

For the remaining sites, available information generally is based on descriptions of the process operations that may have resulted in the release of a radiological or hazardous constituent. Radiological surveys and prior cleanup activities are described for some of the waste sites. Cleanup actions include decontamination operations, removal of impacted soils or materials, and/or covering the affected area with clean soil.

2.3 WASTE SITE ATTRIBUTES

The 200-MG-1 OU contains several different types of waste sites as shown in Table 2-1. Site areas range from 10 to 11.0×10^6 ft². The majority of the waste sites are small. Generally, the very small area waste sites are associated with an engineered structure (e.g., French drain, valve pit) or a UPR of very limited extent. Larger area sites include ponds, dumping areas, septic tile fields, or wind-disseminated UPRs. The engineered structures that have been in direct contact with process waste streams (i.e., French drains, reversed wells, cribs, and retention basins) also may be contaminated, and include materials such as concrete and infiltration gravels.

Dumping areas include many different types of waste materials, such as scrap materials, construction debris (concrete, wood, and metal), used containers, and other miscellaneous items. The contamination at these sites generally is limited to the soil in immediate contact with the waste materials, with little or no migration into the underlying soil.

Sites identified as UPRs consist of areas where a release has been disseminated by wind or liquid was released onto the ground. Large area waste sites are found near some of the tank farms where past releases of particulates from the tanks were locally spread by the wind. In other cases, radioactive tumbleweeds and tumbleweed fragments dispersed contamination over a wide area. The majority of the UPR areas have been cleaned up by previous soil removal actions, and/or placement of a 0.3 to 0.6 m (1- to 2-ft) thick soil stabilization cover over the site. Soil stabilization covers are used to prevent or minimize the uncontrolled spreading of contamination. Appendices A and B note those waste sites with a soil stabilization cover. Approximately one-third of all the 200-MG-1 OU waste sites have soil stabilization covers.

Table 2-1. 200-MG-1 Operable Unit Waste Site Attributes. (10 Pages)

Waste Site Type	Number of Sites	Site Areas (ft ²)	Potential Contaminants	Potential Contaminant Intervals (depth bgs ft) [Number of sites in Interval]	Primary Contaminated Media	Secondary Contaminated Media	Waste Site Characteristics
<i>Waste sites associated with above ground particulate or small volume liquid releases (potential contaminant depth – less than 1.8 m [6 ft])</i>							
Unplanned releases – windblown tumbleweeds, tank farm or stack particulates, leaks, and spills	53	72 – 516,783 (areas are unknown for 12 sites)	Primarily radiological contaminants. Specific contaminants are generally unknown.	0-1 [18]; 0-1 (spotty) [24]; 0-3 [4]; 0-3 (spotty) [1]; 0-6 [6]	Soil	None	Generally spotty surficial distribution of windblown radiological contaminated materials. Site sizes often are large. Includes small volume liquid release sites that are generally of minor extent.
Dumping areas	23	15 – 3,683,933 (areas are unknown for 3 sites)	Primarily nonradiological contaminants.	0-1 [2]; 0-1 (spotty) [9]; 0-2 (spotty) [1]; 0-3 [1]; 0-3 (spotty) [7]; 0-6 [1]; 0-6 (spotty) [1]; above ground [1]	Soil	Debris, Construction Materials	Areas used to dump debris, construction materials, containers, and other miscellaneous items. Areas with empty containers may have had minor liquid releases. Spotty surficial contamination.
Unplanned releases – railroad lines leaks and spills	22	35 – 237,747 (areas are unknown for 6 sites)	Primarily radiological contaminants. Specific contaminants are generally unknown.	0-2 [7]; 0-2 (spotty) [15]	Railbed/Soil	Steel Rail, Wooden Ties	Includes railroad lines between process facilities and storage or burial grounds. Rail lines were used to carry contaminated equipment and some liquids. Releases occurred at facility loading stations and as intermittent drips along lines during transport.
Burn pit	4	8,000 – 79,194	Potential nonradiological contaminants, including metal, organics, and asbestos.	0-1 (spotty) [4]	Soil	None	Areas used to burn miscellaneous nonradioactive construction and office waste.
Spoil piles/berm	2	2,264 – 2,670	Primarily radiological contaminants, possibly organics (oil and grease). Specific contaminants are generally unknown.	0-1 [1]; 0-3 [1]	Soil	None	One area may have been used to decontaminate equipment; the other may be related to leaks in buried pipelines or to parking lot expansion work.

Table 2-1. 200-MG-1 Operable Unit Waste Site Attributes. (10 Pages)

Waste Site Type	Number of Sites	Site Areas (ft ²)	Potential Contaminants	Potential Contaminant Intervals (depth bgs ft) [Number of sites in Interval]	Primary Contaminated Media	Secondary Contaminated Media	Waste Site Characteristics
Mud pit	1	5,001	Unknown.	0-3 [1]	Soil	None	Pit used for equipment decontamination or disposal of drilling mud.
Coal ash pit	1	480,000	A Tiger Team finding for disposing of steam plant ash without a permit prompted sampling of wet flyash and bottom ash from the 200 Area power plants. Sample results determined the ash to be non-dangerous and non-corrosive and not regulated under <i>Washington Administrative Code</i> . Therefore, no permit was required to dispose of the steam plant ash.	0-1 (spotty) [1]	Soil	None	The site consists of an area of dark soil where coal ash and coal ash slurry were dumped. Some material was disposed of through a slurry pipeline and some was dumped from trucks.
Depression/pit (nonspecific)	1	750,000	Unknown.	0-1 (spotty) [1]	Soil	None	Former construction gravel pit. Part of pit may have been used for disposal of nonhazardous concrete waste and other debris (subsequently paved over for parking lot).
Total	107						

Table 2-1. 200-MG-1 Operable Unit Waste Site Attributes. (10 Pages)

Waste Site Type	Number of Sites	Site Areas (ft ²)	Potential Contaminants	Potential Contaminant Intervals (depth bgs ft) [Number of sites in Interval]	Primary Contaminated Media	Secondary Contaminated Media	Waste Site Characteristics
<i>Waste sites associated with small volume incidental releases involving a structure (potential contaminant depth – less than 1.8 m [6 ft])</i>							
Foundations	3	14,490 – 10,795,352	Radiological and nonradiological contaminants, may include plutonium, carbon tetrachloride, hydrocarbon fuels (gasoline), miscellaneous debris, and sanitary sewer waste	0-1 [1]; 0-2 (spotty) [1]; 0-6 (spotty) [1]	Soil	Concrete foundations	One site consists of building foundation for laundry that cleaned contaminated clothing; one consists of foundations for ammunition storage igloos where plutonium scrap was later stored; and one consists of foundations and debris from a large shop and staging/fuel storage area.
Military compound	1	380,860	Nonradiological battery and oil wastes.	0-1 (spotty) [1]	Soil	None	Former anti-aircraft gun site with the remains of deteriorated batteries or ammunition, possible oil waste.
Pump station	1	1,959	Primarily radiological contaminants. Specific contaminants are unknown.	0-6 [1]	Soil, concrete footings, drains	Railroad ballast	Concrete foundations for unloading platforms and associated drains; some contaminated soil (possibly railroad ballast) has been removed.
Pump station/product piping	1	800	Primarily radiological contaminants. Specific contaminants are unknown.	0-6 [1]	Concrete pads, pipelines	Soil	Concrete unloading pads and associated pipelines.
Total	6						

Table 2-1. 200-MG-1 Operable Unit Waste Site Attributes. (10 Pages)

Waste Site Type	Number of Sites	Site Areas (ft ²)	Potential Contaminants	Potential Contaminant Intervals (depth bgs ft) [Number of sites in Interval]	Primary Contaminated Media	Secondary Contaminated Media	Waste Site Characteristics
<i>Waste sites associated with larger volume waste stream discharges (potential contaminant depth – less than 4.6 m [15 ft])</i>							
Septic tanks and tile fields (septic systems)	22	17.5 – 325 (areas are unknown for 8 sites)	Sanitary waste (one site marked as potentially containing underground radioactive material).	0-6.5 [2]; 0-7 [2]; 0-10 [3]; 0-11 [1]; 0-13 [1]; 0-14 [2]; 0-14.8 [1]; 0-15 [2]; unknown [8]	Concrete tanks	Soil, drain lines	Generally concrete septic tanks and associated drain fields.
Crib	8	4 – 15,096	Primarily radiological contaminants. Specific contaminants are generally unknown.	2-15 [1]; 8-15 [2]; 10-15 [2]; 11-15 [1]; 12-15 [1]; 9.5-15[1]	Soil, crib fill material	Discharge piping	Unlined cribs generally filled with coarse crushed rock to the discharge level and backfilled with earth.
Ditch	9	8,400 – 133,300	Radiological and nonradiological contaminants. Radiological contaminants may include Cs-137, S-90, and U-238. Nonradiological contaminants may include arsenic, barium, lead, nickel, silver, cadmium, selenium, mercury, and hexavalent chromium.	3-6 [1]; 6-8 [1]; 6-10 [6]; 6-15 [1]	Soil	None	Originally open ditches, all ditches have been backfilled and six are described as “surface stabilized.” Surface stabilization is not recorded for one ditch. One ditch was contaminated with a release from PUREX and a surface seal was constructed that incorporated 10 mil plastic sheeting between sand and gravel layers.
Drain/tile field	1	24,025	Radiological and nonradiological contaminants. Specific contaminants are unknown.	6-10 [1]	Soil	Discharge piping	The site consists of a trench and a seepage basin.

Table 2-1. 200-MG-1 Operable Unit Waste Site Attributes. (10 Pages)

Waste Site Type	Number of Sites	Site Areas (ft ²)	Potential Contaminants	Potential Contaminant Intervals (depth bgs ft) [Number of sites in Interval]	Primary Contaminated Media	Secondary Contaminated Media	Waste Site Characteristics
Trench	2	484 – 8,000	Radiological and nonradiological contaminants. Specific contaminants are generally unknown. Nonradiological constituents may include uranium and other metals.	4-6 [1]; 12-15 [1]	Soil	None	One trench was dug as a single use excavation (also described as a pit) to receive acidic waste from a diversion box. The other trench originally was unlined but was later converted to a retention basin by the addition of a hypalon liner and later a concrete liner and cover.
Retention basin	3	2,500 – 30,258	Radiological and nonradiological contaminants. Radiological contaminants may include Cs-137, Sr-90, U-238, and Tc-99. Nonradiological contaminants may include arsenic, cadmium, lead, silver, and selenium, Aroclor-1254, methylene chloride, and sulfate.	6-9 [1]; 10-12 [1]; 14-15 [1]	Concrete or Liner, Soil	Soil	These retention basins are concrete structures. One originally was constructed by lining an existing unlined trench with a hypalon liner and subsequently with a concrete liner and cover. One retention basin was backfilled; two are not.
Pond	3	289,110 – 1,080,105	Radiological and nonradiological contaminants. Specific contaminants are unknown.	0-3 [2]; 8-11 [1]	Soil	None	These ponds received cooling water, steam condensate, and/or miscellaneous liquid waste; a portion of one of the ponds was later used as a solid waste burial ground. The ponds have been backfilled and surface stabilized.
Total	48						

Table 2-1. 200-MG-1 Operable Unit Waste Site Attributes. (10 Pages)

Waste Site Type	Number of Sites	Site Areas (ft ²)	Potential Contaminants	Potential Contaminant Intervals (depth bgs ft) [Number of sites in Interval]	Primary Contaminated Media	Secondary Contaminated Media	Waste Site Characteristics
<i>Waste sites associated with small volume incidental releases (potential contaminant depth – less than 4.6 m [15 ft])</i>							
Dumping area	1	2,948	Nonradionuclide contamination consisting of paint, paint solvents, and diesel fuel spilled on the ground.	0-15 (spotty) [1]	Soil	None	Soil contaminated with paint and paint solvents at a paint shop, and possibly diesel fuel at an equipment staging area.
Burial ground	2	4,800-13,720	Primarily radiological contaminants. May include Cs-137 and Sr-90. Some nonradiological contaminants may be present.	0-7 [1]; 0-15 [1]	Metal scrap, concrete, brick, mortar	Soil	One burial ground contains the 291-C Exhaust Stack, composed of concrete, acid-resistant brick, and mortar. Very high gamma levels were measured before demolition of the stack. This site was backfilled and has been surface stabilized with an ash layer. The other burial ground contains metal scrap and a tank.
Sanitary landfill	1	15,000	Both radiological and nonradiological contaminants. A survey shows 1,500 cpm beta/gamma contamination. The nonradiological contamination is not specified but debris consists of general office waste, glass, electrical waste, and minimal metal waste.	0-15 [1]	Buried debris	Soil	This site consists of a backfilled trench.

Table 2-1. 200-MG-1 Operable Unit Waste Site Attributes. (10 Pages)

Waste Site Type	Number of Sites	Site Areas (ft ²)	Potential Contaminants	Potential Contaminant Intervals (depth bgs ft) [Number of sites in Interval]	Primary Contaminated Media	Secondary Contaminated Media	Waste Site Characteristics
Unplanned releases – associated with pipelines	2	199 – 1,840	Primarily radiological contaminants.	0-15 [1]; 8-10 [1]	Soil, concrete piping	None	One site consists of ground contaminated with liquid from a transfer line related to a ruptured fire hose. The other site consists of buried contaminated concrete of pipeline material related to a pipeline repair.
Unplanned release – associated with equipment storage yard	1	3,600	Nonradiological contamination associated with leaks or spills of petroleum products.	0-15 (spotty) [1]	Soil	None	Heavy equipment staging area.
Total	7						
Waste sites associated with small volume waste stream discharges from an engineered structure (potential contaminant depth – less than 4.6 m [15 ft] deep)							
Experiment/Test site	1	591	Potential radionuclides may include Co-60, Sr-90, Ru-106, and Ce-144.	0-8 [1]	Underground galvanized steel enclosures, radioactive sources	Soil	The site consists of three 6-in. steel silos containing radioactive sources that were used to calibrate instrumentation. The site has been surface stabilized.
Valve pit	1	35	Plutonium, other unspecified radiological contaminants.	0-9 [1]	Valve pit tank, valves, and piping	Soil	Valve pit and underground holding tank for condensate with low levels of plutonium.

Table 2-1. 200-MG-1 Operable Unit Waste Site Attributes. (10 Pages)

Waste Site Type	Number of Sites	Site Areas (ft ²)	Potential Contaminants	Potential Contaminant Intervals (depth bgs ft) [Number of sites in Interval]	Primary Contaminated Media	Secondary Contaminated Media	Waste Site Characteristics
Unplanned release -- associated with underground structure	1	61,548	Radionuclide contaminants from underground structures including a vault with a silica gel column and a neutralization tank. Processed contaminants include UNH, thorium nitrate, N Reactor decontamination waste, and 300 Area laboratory waste.	0-15 (spotty) [1]	Concrete, silica gel, piping(?), possibly stainless steel column	Soil	Site consists of an underground vault with a silica gel column that was used for stripping fission products from UNH. Some piping may still be present, although surface and above-ground structures have been removed.
Total	3						
Waste sites associated with small volume waste stream discharges from an engineered structure (potential contaminant depth -- greater than 4.6 m [15 ft] deep)							
French drain	2	11 - 70	Both radiological and nonradiological contaminants. Potential radiological contaminants for one site may include Tc-99, Sr-90, H ₃ , and U-238. Nonradiological contaminants may include arsenic, nitrate and hexavalent chromium, and mercury. The potential radiological and nonradiological constituents are unknown for the other site.	16-20 [1]; 22-30 [1]	Steel tanks, metal culverts	Soil	One site consists of two vertically buried metal culverts, 20 ft long and filled with rock. One consists of four above-ground steel tanks and four French drains of unknown construction. The first site was stabilized with clean backfill; the second site has not been backfilled or stabilized.

Table 2-1. 200-MG-1 Operable Unit Waste Site Attributes. (10 Pages)

Waste Site Type	Number of Sites	Site Areas (ft ²)	Potential Contaminants	Potential Contaminant Intervals (depth bgs ft) [Number of sites in Interval]	Primary Contaminated Media	Secondary Contaminated Media	Waste Site Characteristics
Experiment/test site	1	128	Short-lived isotope tracers and lead bricks.	58-60 [1]	Neutron probe, lead bricks	Soil	Site consists of two buried steel lysimeters with an assumed concrete underground monitoring room. A neutron probe and lead bricks that were used to hold cables in place may still be present.
Retention basin	2	8,000 – 10,260	Primarily radiological contaminants.	12-20 [1]; 13-20 [1]	Soil	Liner	One retention basin held contaminated cooling water before discharge to the 216-B-3 or 216-A-25 Ponds. This basin was lined with rubber bladders, which failed in 1979. The basin eventually was backfilled with soil including contaminated fill. The other basin was rubber-lined and held cooling water and steam condensate from PUREX for later reprocessing.
Burial vault	3	144-3,483	Primarily radiological contaminants.	3-29 [2]; 5-26 [1]	Concrete, wood, and carbon steel	Soil	Underground burial vaults that received contaminated laboratory trash, debris and sampler waste. One of the vaults is reported to contain mixed fission product/transuranic waste.
Receiving vault	1	289	Primarily radiological contaminants.	0-19 [1]	Concrete and stainless steel	Soil	Concrete vault containing two tanks. Supernate and sludge remain in the tanks. One tank reportedly contains 228 grams of plutonium in the sludge.
Neutralization tank	2	77 – 94	Primarily radiological contaminants.	0-20 [2]	Steel tanks	Soil	Stainless steel underground tanks were used to neutralize contaminated acid. One of the tanks may still contain liquid.
Total	11						

Table 2-1. 200-MG-1 Operable Unit Waste Site Attributes. (10 Pages)

Waste Site Type	Number of Sites	Site Areas (ft ²)	Potential Contaminants	Potential Contaminant Intervals (depth bgs ft) [Number of sites in Interval]	Primary Contaminated Media	Secondary Contaminated Media	Waste Site Characteristics
<i>Waste sites associated with larger volume waste stream discharges (potential contaminant depth – greater than 4.6 m [15 ft])</i>							
Trench	4	100 – 6,400	Primarily radiological contaminants.	15-20 [1]; 15-25 [1]; 16-20 [1]; 25-30 [1]	Soil	None	Two trenches received PUREX start up process waste. One received unirradiated uranium waste from start up of 202-S. One received laboratory waste from 231-Z Building. All trenches have been backfilled.
Crib	5	2184 – 8400	Primarily radiological contaminants.	15-20 [1]; 16-20 [3]; 13-25 [1]	Soil	None	These cribs received PUREX start up waste, PUREX acid fractionator condensate and cooling water, silica-gel regeneration waste and pump house drainage from 203-A and UNH storage pit, REDOX and PUREX process condensate, and high salt waste from 201-C.
Septic tanks and septic tanks with tile fields (septic systems)	3	204 – 533	Nonhazardous sanitary waste.	0-16 [2]; 0-20 [1]	Concrete tanks	Soil, drain lines	Generally concrete septic tanks and associated drain fields.
Total	12						

bgs = below ground surface.
 Ce-144 = cerium-144.
 Co-60 = cobalt-60.
 cpm = counts per minute.
 Cs-137 = cesium-137.
 H₃ = protonated molecular hydrogen.
 PUREX = Plutonium-Uranium Extraction Plant.
 REDOX = Reduction-Oxidation Plant.
 Ru-106 = ruthenium-106.
 Sr-90 = strontium-90.
 Tc-99 = technetium-99.
 U-238 = uranium-238.
 UNH = uranyl nitrate hexahydrate.

2.4 SOURCES, NATURE, AND EXTENT OF CONTAMINATION

This section includes a summary of the information on the existing waste sites and the process to select the COPCs.

2.4.1 Site Information

Confirmed depth of potential contamination in the 200-MG-1 OU waste sites is not available. This information, however, is needed to estimate the removal action costs. To fill this data gap, the contaminant depth for each site was estimated based on the following considerations.

- The known or estimated volume of a release. The volume of waste released is not typically known with a high degree of certainty for the majority of the waste sites. The nature of the UPRs is often known and the amount of material available for release was estimated to be relatively small. For those waste sites involving the discharge of process waste streams, such as cribs, ditches, and ponds, the effluent volumes may have been large. Effluent discharge volume data for engineered liquid disposal waste sites, if available, are summarized in RPP-26744, *Hanford Soil Inventory Model, Rev. 1*. Larger volume releases may result in deeper vertical migration into the soil column.
- Depth at the point of release. Many of the waste sites in this OU are the result of contaminated material released on the ground surface as a result of windblown contaminated particulates. Process waste streams, such as cooling water, also were discharged at the surface into ditches and pond waste sites. Septic system tile field discharge points generally are at depths less than 3 m (10 ft) bgs. Reverse wells, cribs, trenches, certain French drains, and structures also may have resulted in releases to the subsurface deeper than 4.6 m (15 ft).
- Engineered liquid disposal facilities. Cribs, ponds, French drains, ditches, and septic systems were designed for waste stream disposal and were intended for liquid discharge directly to the soil at or below ground surface.
- Release incidental to primary operations. Uncontrolled releases were not intended at these sites, but an incidental release occurred as the result of operational incidents or improper handling of materials in dumping areas, railroad lines, and building storage areas.
- Mobility of the potential contaminants associated with the release. Available information concerning the process waste streams indicates that the primary contaminants released at the waste sites in this OU have low mobility.

Appendices A and B present the estimated contaminant depths and potential contaminants at each waste site. Table 2-1 provides a summary of this assessment and other site attributes. The waste sites in Table 2-1 were grouped into three potential depth categories: less than 1.8 m (6 ft), less than 4.6 m (15 ft), and deeper than 4.6 m (15 ft). These were categories refined by release volume. The conceptual contaminant distribution model for the 200-MG-1 OU is shallow contamination with no potential for impact to groundwater. Nevertheless, waste sites may be encountered during removal actions that do not fit the conceptual model (i.e., sites with contamination greater than 4.6 m [15 ft]). If RALs are not met at 4.6 m (15 ft), then soil samples may be taken at depths greater than 4.6 m (15 ft) to characterize potential groundwater risk

drivers. A decision matrix for determining the path forward will be included in the RAWP. These sites will be dispositioned in accordance with the process described in Section 6.2.

Existing site descriptions indicate that potential release locations and lateral extent are poorly defined or undefined at these types of sites. Windblown contaminated materials such as particulates, surface leaks, and spills were assumed to result in spotty contamination. The lateral extent of potential contamination for waste sites that received liquid discharges was determined by considering the portion of the site that was in direct contact with the liquid, yielding contaminated soil volume estimates for the cost analyses.

2.4.2 Selection of Contaminants of Potential Concern

A COPC is a constituent suspected of being associated with site-related activities that represent a potential threat to human health or the environment, and constituent data are of sufficient quality for use in a quantitative baseline risk assessment. The 200-MG-1 OU waste sites originate from many different waste-generating processes and release mechanisms.

The first step in the COPC selection process was to query the Hanford Environmental Information System database for potential risk-driver contaminants located in the Central Plateau, as shown in Figure 2-1. The maximum detected concentrations were obtained for constituents in soil samples taken from wells, boreholes, and waste sites.

The query identified 332 constituents, and the maximum detected value of each constituent was compared to human-health and ecological-screening values, using the following sources.

- **Human Health**

- Method C of Ecology's cleanup levels and risk calculation table (Ecology, 2007, *Cleanup Levels & Risk Calculations [CLARC]*)
- Radiation soil preliminary cleanup levels of 15 mrem/yr (DOE/RL-2006-50, *200-UR-1 Unplanned Release Waste Group Operable Unit Sampling and Analysis Plan*, Table 3)

- **Ecological**

- WAC 173-340-900, "Tables," and WAC 173-340-7493, "Site-Specific Terrestrial Ecological Evaluation Procedures," Table 749-3
- DOE-STD-1153-2002, *A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota* and DOE/EH-0676, *RESRAD-BIOTA: A Tool for Implementing a Graded Approach to Biota Dose Evaluation, User's Guide, Version 1*

Figure 2-1. Boundary of Central Plateau Information Query.



Table 2-2 show preliminary COPCs. The asterisk marks constituents with maximum detected values greater than the human health and ecological screening values. Polynuclear aromatic hydrocarbons, aroclors, and metals also have been added to the list of COPCs because they may be present as a result of Hanford Site operations based on current information from other waste sites.

To ensure an effective means for detecting and reporting constituents that may not have been identified in the process, a method-based approach will be used for reporting analytical results and a COPC screening approach will be developed to identify those analytes that are the most likely to contribute to risk from exposure. Process knowledge, where available, will be used to guide sampling and analysis. Where no process knowledge exists, samples will be analyzed using analytical methods representing the preliminary list of COPCs shown in Table 2-2.

Table 2-2. Preliminary Contaminants of Potential Concern.

Metals		
Antimony*	Copper*	Silver
Arsenic*	Lead*	Thallium*
Barium*	Manganese	Uranium*
Beryllium	Mercury*	Vanadium*
Chromium*	Nickel*	Zinc*
Cobalt	Selenium*	
Radionuclides		
Americium-241*	Europium-155*	Uranium-235*
Cesium-137*	Strontium-90*	Uranium-233/234*
Europium-152*	Plutonium-238*	Uranium-238*
Europium-154*	Plutonium-239/240*	
Polynuclear Aromatic Hydrocarbons		
Acenaphthene	Benzo(b)fluoranthene	Fluorene
Acenaphthylene	Benzo(ghi)perylene	Naphthalene
Anthracene	Chrysene	Phenanthrene
Benzo(a)anthracene	Dibenz(a,h)anthracene	Pyrene
Benzo(a)pyrene	Fluoranthene	
Polychlorinated Biphenyls		
Aroclor-1016	Aroclor-1242	Aroclor-1260*
Aroclor-1221	Aroclor-1248	
Aroclor-1232	Aroclor-1254*	
Total Petroleum Hydrocarbons		
Total petroleum hydrocarbons (diesel range)*		Total petroleum hydrocarbons (kerosene range)*

*Constituents identified were determined during the screening process.

2.5 STREAMLINED RISK EVALUATION

An exposure pathway is the physical course that a COPC takes from the point of release to a receptor. The route of exposure is the means by which a COPC enters a receptor. For an exposure pathway to be complete, all of the following components must be present:

- Source
- Mechanism of chemical release and transport
- Environmental transport medium
- Exposure point
- Exposure route
- Receptor or exposed population.

In the absence of any one of these components, an exposure pathway is considered incomplete and, therefore, creates no risk or hazard. This section examines the potential site contaminant release mechanisms, potentially complete human exposure pathways and receptors, potentially complete ecological exposure pathways, and the potential threats.

2.5.1 Release Mechanisms

The primary release mechanisms for the 200-MG-1 OU waste sites include the following:

- Discharge of liquid effluent waste streams or cooling water to shallow cribs, ditches and ponds, French drains, or septic system tile fields
- Unplanned release of liquid waste streams to shallow zone soils
- Wind dispersal of particulates from various sources.

As discussed in Section 2.1.4, the 200-MG-1 OU waste sites have contamination in the shallow vadose zone and are not considered a threat to groundwater quality.

2.5.2 Potentially Complete Human Exposure Pathways and Receptors

The future land use of the Central Plateau is described in DOE/EIS-0222-F. DOE/EIS-0222-F (and the associated 64 FR 61615, "Record of Decision: Hanford Comprehensive Land-Use Plan Environmental Impact Statement") describes the Central Plateau land use as industrial-exclusive. DOE/EIS-0222-F defines industrial-exclusive as "preserving DOE control of the continuing remediation activities and use of the existing compatible infrastructure required to support activities such as dangerous waste, radioactive waste, and mixed waste treatment, storage, and disposal facilities." Most of the 200-MG-1 OU waste sites are inside the industrial-exclusive boundary. The most plausible exposure pathways are considered for characterizing human health risks. A worker will be used to calculate RALs inside the industrial-exclusive boundary. Conservation and mining are land uses identified for land located immediately outside the industrial-exclusive boundary. Several of the 200-MG-1 OU waste sites are outside this boundary (see Chapter 3.0).

The most plausible exposure pathways are considered for characterizing human-health risks. A worker will be used to calculate RALs for those waste sites located inside the industrial-exclusive boundary. Exposure scenarios for the conservation/mining land uses will be used to calculate RALs for those waste sites located outside the boundary. Although it is unlikely that

areas near the industrial-exclusive boundary will be used for residential purposes, use of RALs that are based on a conservation land use will limit land-use control areas (areas where institutional controls limit reuse) near the boundary.

The potential human health exposure pathways are:

- Inhalation of dust or particulates
- Ingestion of soil
- Dermal contact
- External radiation exposure.

2.5.3 Potentially Complete Ecological Exposure Pathways

The most plausible potential ecological exposure pathways for the 200-MG-1 OU waste sites stem from direct contact with shallow-zone soil that contains suitable habitat for terrestrial wildlife.

Ecological RALs that are protective of terrestrial ecological receptors will be established for use on 200 Area waste sites. These values will be presented in the removal action work plan.

2.5.4 Potential Threats

If action is delayed or not taken, waste site contaminants will continue to migrate in the environment. Severe weather and vegetation growth can result in further environmental contamination. This may cause a threat to worker health and the environment through ingestion and inhalation of particles and direct exposure, and to the public through inhalation of airborne contaminants. Subsurface liquids may continue to migrate. Areas that have been cleaned up may become recontaminated with the release of contaminants from these waste sites. The potential for worker, public, and environmental exposures and removal costs increases with continued distribution of contamination in the environment over time.

2.6 RISK EVALUATION AND SITE CONDITIONS THAT JUSTIFY A REMOVAL ACTION

The DOE has determined that the 200-MG-1 OU waste sites have either released or have the potential to release CERCLA hazardous substances, and that a non-time-critical removal action, pursuant to authority delegated under Executive Order 12580 and the Tri-Party Agreement Action Plan, Section 7.2.4, is warranted to mitigate the threat of release.

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3.0 REMOVAL ACTION OBJECTIVES AND REMOVAL ACTION LEVELS

This chapter discusses the RAOs and RALs required by the removal actions for the 200-MG-1 OU. The development of the RAOs and RALs identified in this EE/CA are consistent with preliminary CERCLA remedial investigation/feasibility study processes for the 200-MG-1 OU and for the other 200 Area OUs.

3.1 REMOVAL ACTION OBJECTIVES

The RAOs provide a basis for evaluating specific removal alternatives to achieve compliance with potential ARARs (specified in Appendix C) and RALs, to the extent practicable. Based on previous RAOs developed for other 200 Area OUs, the RAOs for this EE/CA are as follows.

- RAO 1. Prevent unacceptable risk to human health and ecological receptors from exposure to soils and/or debris contaminated with nonradiological constituents to 4.6 m (15 ft) bgs at concentrations above the appropriate land-use RALs.
- RAO 2. Prevent unacceptable risk to human health and ecological receptors from exposure to soils and/or debris contaminated with radiological constituents to 4.6 m (15 ft) bgs at concentrations above the appropriate land-use RALs.
- RAO 3. Prevent adverse impacts to cultural resources and threatened or endangered species, and minimize wildlife habitat disruption.

Achieving these RAOs can be accomplished by reducing concentrations (or activities) of contaminants to RALs or by eliminating potential exposure pathways/routes. The DOE will excavate waste sites within the Industrial-Exclusive Area using an observational approach. This initially will be demonstrated using field instruments that detect beta- or gamma-ionizing radiation. The target excavation depth will be achieved when field radiological surveys show that residual radioactivity approximates RAL soil conditions. If this is judged not feasible for the site, the DOE will (to the maximum extent practicable) complete the removal action in a manner consistent with the anticipated final remedial action by comparison of COPC concentrations to RALs.

Verification sampling and analysis will be performed to assist in closing out the removal action at individual sites. Protection of human health and the environment is met when risks from residual contamination are within the CERCLA 10^{-6} to 10^{-4} excess lifetime cancer risk range or when the hazard index is less than 1.0 for noncarcinogenic effects (EPA, 1991, *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*).

3.2 REMOVAL ACTION LEVELS

The conceptual site model in this EE/CA consists of sites with a shallow contamination profile that do not pose a risk to groundwater. Removal action levels for this contamination will be based on the RAOs and ARARs (Appendix C). The RALs will protect human health and the environment and will be consistent with final remedial cleanup levels being developed for the Central Plateau OU remedial actions. The RALs for the waste sites identified in this EE/CA will be based on the CERCLA risk ranges and WAC 173-340, "Model Toxics Control Act –

Cleanup,” for carcinogenicity, toxicity, and protection of the ecology. These RALs will be developed and documented in the RAWP and will be based on an anticipated future land use and the attainment of acceptable levels of human health and ecological risk for waste sites to the extent practicable. The RALs for waste sites inside the industrial-exclusive boundary are based on a worker and protection of wildlife. The RALs for waste sites outside the industrial-exclusive boundary are based on an anticipated future land use of conservation and mining. However, if sites are encountered with contamination deeper than 4.6 m (15 ft) bgs, then soil samples may be taken at depths greater than 4.6 m bgs, to characterize potential groundwater risk drivers. A decision matrix for determining the path forward in this situation will be included in the RAWP.

Table 3-1 lists the 200-MG-1 OU waste sites that are outside or partially outside the industrial-exclusive boundary. The sites not listed in Table 3-1 are within the industrial-exclusive boundary.

Attainment of the RALs is intended to meet the first two RAOs identified in Section 3.1 and is expected to satisfy the RAOs established in a final record of decision.

Table 3-1. 200-MG-1 Operable Unit Sites Outside the Central Plateau Industrial-Exclusive Area.

Waste Site Code	Waste Site Type	Waste Site Code	Waste Site Type
200-E-101	Experiment/Test Site	600-218	Dumping Area
200-E-109*	Unplanned Release	600-220	Dumping Area
200-E-110	Dumping Area	600-222	Military Compound
200-W-33*	Dumping Area	600-226	Dumping Area
600-36	Burn Pit	600-262	Crib
600-38	Dumping Area	600-275	Foundation
600-40	Dumping Area	600-281	Dumping Area
600-51	Dumping Area	Old Central Shop Area (OCSA)	Foundation
600 Original Central Landfill	Sanitary Landfill	UPR-600-21	Unplanned Release

* Indicates a site only partially outside of the industrial-exclusive boundary.

4.0 DISCUSSION OF ALTERNATIVES

A summary of each of the four removal action alternatives for the 200-MG-1 OU waste sites is provided below. The alternatives are discussed in general terms as they will be applied to the 200-MG-1 OU waste sites.

4.1 NO-ACTION ALTERNATIVE

The NA alternative is required by CERCLA as a baseline for comparison with other removal action alternatives. No legal restrictions, ICs, or active measures are applied to the waste site.

4.2 MAINTAIN EXISTING SOIL COVER/INSTITUTIONAL CONTROLS/MONITORED NATURAL ATTENUATION ALTERNATIVE

Under the MESC/IC/MNA alternative, the existing soil cover on a waste site is maintained and/or augmented as needed to provide protection from intrusion by biological receptors, along with ICs (e.g., excavation permits) and physical barriers (e.g., fencing) that will mitigate contaminant exposure. Appendices A and B identify waste sites that have soil covers (i.e., soil stabilization covers and clean overburden). With this alternative, radioactive contaminants remaining at the site are allowed to decay in place (i.e., to attenuate naturally), thereby reducing risk until RALs are met. This alternative will be considered for waste sites that meet the following conditions.

- A soil cover exists on the site.
- Contaminant concentrations will attenuate to below RALs within 150 years.
- Contaminants do not have a pathway to receptors within 150 years.
- Cost for this alternative is lower than the other alternatives and is still protective of human health and the environment.

DOE/RL-2001-41, *Sitewide Institutional Controls Plan for Hanford CERCLA Response Actions*, describes how the ICs are implemented and maintained and serves as a reference for the selection of ICs in the future. Institutional controls generally include non-engineered restrictions on activities and access to land, groundwater, surface water, waste sites, waste-disposal areas, and other areas or media that contain hazardous substances. This is to minimize the potential for human exposure to the substances. Common types of ICs include procedural restrictions for access, warning notices, permits, easements, deed notifications, leases and contracts, and land-use controls. Waste sites having a thin soil cover may require more stringent ICs (e.g., physical barriers, biological monitoring, removal of deeply rooted plants, and control of deep-burrowing animals) to be implemented. The RAWP will specify soil cover thickness requirements. Water-and land-use restrictions also will be used, as necessary, to prevent exposure during the attenuation period.

Attenuation relies on natural processes to lower contaminant concentrations until cleanup levels are met. Monitored natural attenuation includes sampling and/or environmental monitoring, consistent with EPA/540/R-99/006, *Radiation Risk Assessment at CERCLA Sites: Q&A*, to

verify that contaminants are attenuating as expected and to ensure that contaminants remain isolated (e.g., will not be released to air or biota). Monitoring activities will include surface radiological surveys and/or subsurface radiological logging to verify that natural attenuation processes are effective. Collection of confirmatory samples and laboratory analysis is included in this alternative to confirm that the radiological contaminants at the site will attenuate and meet cleanup criteria within 150 years. SGW-38383 describes sample design assumptions for cost estimating.

4.3 CONFIRMATORY SAMPLING/NO FURTHER ACTION ALTERNATIVE

Under the CS/NFA alternative, sampling and analysis confirm that soil is at or below RALs and that no further action is required. Radiological surveys will be included in the initial site investigation as appropriate for site conditions to support the selection of sampling locations. A sampling and analysis plan will be prepared as part of the RAWP development. The sampling and analysis plan will contain the necessary information to support both chemical and radionuclide data collection at a sufficient quantity and quality to make a determination whether RALs have been met.

This alternative will be considered for waste sites that meet one or more of the following conditions.

- Prior cleanup activities have been performed, but insufficient data are currently available to close out the waste site.
- COPC concentrations are not expected to exceed RALs.
- The contamination status of the site is uncertain and a strong possibility exists that the site is not contaminated.

If the results of CS indicate that the CS/NFA is inappropriate (i.e., >RALs), then the RTD action will be implemented or the waste site will be removed from this EE/CA and will be evaluated as part of the remaining 200-MG-1 OU.

4.4 REMOVAL, TREATMENT, AND DISPOSAL ALTERNATIVE

Under the RTD alternative, sampling and analysis confirm that soil contains contamination above RALs and requires removal. However, where process knowledge and information are available to make a determination, removal actions may be conducted without prior confirmation sampling to remove and dispose of other materials above RAL, with treatment as required for disposal. Through verification sampling and analysis, demonstrate remaining in situ soils are at or below RALs. This alternative will be considered for waste sites that meet one or more of the following conditions.

- Contaminant concentrations are known or expected to exceed RALs.
- Contaminants will not naturally attenuate within 150 years or below RALs by 2050.

The cleanup of sites under the RTD alternative will be guided by the observational approach. The observational approach is a method of planning, designing, and implementing a removal action that relies on information (e.g., field instrument readings and/or field screening samples)

collected during the removal to guide the direction and scope of the activity. Initial screening and sampling data are used for an ERDF profile, to assess the extent of contamination and to make real-time decisions in the field. Following some excavation, the extent of contamination may be further assessed by additional screening and sampling. The extent of removal is then adjusted based on those results. Targeted removals will be conducted under this alternative if contamination is localized in only a portion of a waste site.

In this alternative, soils will be removed until the RALs are achieved, generally to a depth of 4.6 m (15 ft). Direct radiological surveys without additional sampling and analysis may be used for verifying that radiological contamination is below RALs for waste sites contaminated only with radionuclides for which the isotopic ratios have been established.

In some cases, excavation beyond 4.6 m (15 ft) may be required. These cases include waste sites where removal of an engineered structure is required, or where verification sampling indicates that deeper excavation is required to attain RALs. If waste sites are encountered with contamination deeper than 4.6 m (15 ft) bgs, then soil samples may be taken at depths greater than 4.6 m to characterize potential groundwater risk drivers. A decision matrix for determining the path forward in this situation will be included in the RAWP.

Depth of excavation will be determined by the on scene coordinator in consultation with Ecology. Extent of excavation will be consistent with the anticipated remedial action to the extent practicable. If results of confirmatory sampling indicate that the RTD is inappropriate (i.e., at or below RALs), then the CS/NFA action will be implemented.

Some waste sites containing structures are known to extend below 4.6 m (15 ft). This was included in the removal action cost estimates calculation.

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5.0 ANALYSIS OF ALTERNATIVES

As required by CERCLA, non-time-critical removal action alternatives shall be evaluated against three criteria: effectiveness, implementability, and cost (EPA, 1993, *Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA*). Table 5-1 provides an evaluation of each removal action alternative against the criteria.

Table 5-1. Description of CERCLA Evaluation Criteria.

CERCLA Evaluation Criteria	Description of CERCLA Evaluation Criteria
Effectiveness	The ability to meet the removal objectives within the scope of the removal action and in terms of overall protection of human health and the environment.
<i>Overall protection of human health and the environment</i>	Evaluates whether implementation of an alternative achieves adequate protection of risks to human health and the environment posed by the likely exposure pathways. Reducing the potential threat to acceptable levels is a CERCLA threshold requirement and is the primary objective of the removal action. The evaluation of this criterion is based on qualitative analysis and on assumptions regarding the contaminants present at the waste site.
<i>Compliance with ARARs</i>	Implementation actions for any selected alternative will be designed to comply with ARARs cited in this document, to the extent possible. ARARs are any appropriate standards, criteria, or limitations under any federal environmental law or more stringent state requirement that must be either met or waived for any hazardous substance, pollutant, or contaminant that will remain on site during or after completion of a removal action. Each alternative is assessed for compliance against these ARARs.
<i>Long-term effectiveness and permanence</i>	The long-term effectiveness and permanence criterion addresses the risk after the removal action is completed. This criterion also refers to the ability of the removal action to maintain reliable long-term protection of human health and the environment after removal action objectives have been met.
<i>Reduction of TMV through treatment</i>	This criterion refers to an evaluation of the anticipated performance of treatment technologies that might be employed in a removal action. The criterion assesses whether a removal action alternative significantly and permanently reduces the TMV of a hazardous substance through treatment. Significant overall reduction can be achieved by destroying toxic contaminants or by reducing total mass, contaminant mobility, or total volume of contaminated media.
<i>Short-term effectiveness</i>	This criterion refers to potential adverse effects on human health and the environment during the removal action implementation phase(s). This criterion also evaluates the speed with which an alternative achieves protection.
Implementability	This criterion addresses the technical and administrative feasibility of implementing the removal action alternative and the availability of the required services and materials.
Cost	This criterion considers the cost of implementing a removal action alternative (including capital costs, operation and maintenance costs, and monitoring costs) to the extent that costs can be quantified. The cost evaluation also includes monitoring of any restoration or mitigation measures for natural, cultural, and historical resources.

ARAR = applicable or relevant and appropriate requirement.

CERCLA = *Comprehensive Environmental Response, Compensation, and Liability Act of 1980.*

TMV = toxicity, mobility, or volume.

Information on contaminant concentrations is limited for the 200-MG-1 OU waste sites. In many cases, process knowledge concerning the characteristics of the waste stream released, materials present, or historical radiological hand-held instrument survey results provide the only indication as to whether the site may currently be contaminated. Qualitative information suggests that COPC concentrations are below RALs for many of the waste sites; therefore, site conditions are presumed in the absence of quantitative data.

Two base assumptions were considered in the alternatives analysis and are repeated as each alternative is evaluated against the criteria. The first assumption is that the waste site is assumed to be contaminated (i.e., at least one COPC concentration is greater than its RAL). The second assumption is that the COPC concentrations are all below RALs at a given waste site. The preferred alternative was selected by matching the available site information with the appropriate assumption and CERCLA evaluation criteria. These criteria are explained in the following sections.

5.1 EFFECTIVENESS

The effectiveness criterion refers to the ability to meet the removal objectives outlined in Chapter 3.0 in terms of overall protection of human health and the environment.

5.1.1 Overall Protection of Human Health and the Environment

This criterion was used to evaluate whether implementation of an alternative achieves adequate protection of risks to human health and the environment through the likely exposure pathways. Reducing the potential threat to acceptable levels is a CERCLA threshold requirement and is the primary objective of the removal action. The evaluation of this criterion was based on a qualitative analysis and the current assumptions regarding the contamination status of the 200-MG-1 OU waste sites.

NA. The NA alternative was retained for detailed analysis as a baseline description of the effects of taking no action, as required by CERCLA regulations. This alternative cannot be considered for the 200-MG-1 OU waste sites because of the absence of characterization data.

MESC/IC/MNA. Under the MESC/IC/MNA alternative, contaminants would remain at the 200-MG-1 OU waste sites beneath the existing soil covers to prevent inadvertent human and biological intrusion until contaminant concentrations reach acceptable levels. This alternative relies on natural attenuation (i.e., radioactive decay for radionuclides) to decrease contaminant concentrations to levels protective of human health and the environment. This alternative is protective if RALs can be achieved within 150 years. Maintenance and periodic monitoring would be required for soil covers throughout the attenuation period. Confirmatory sampling is required to determine that attenuation would be achieved within 150 years, based on half-lives of the radionuclides at the waste site.

CS/NFA. The CS/NFA alternative would protect human health and the environment if confirmatory sampling and analysis show contaminant levels below RALs and appropriate risk levels are met. This alternative cannot be applied to waste sites when sampling and analysis shows contaminant concentrations above RALs because additional actions would not be taken

and residual contaminants could lead to unacceptable exposures to human or ecological receptors.

RTD. The RTD alternative is protective of long-term human health and the environment because the contaminants are removed from the waste sites. However, this alternative has greater potential to expose workers to contamination and industrial safety hazards than the other alternatives.

5.1.1.1 Contaminant Levels Exceed RALs

The RTD alternative is most protective for the 200-MG-1 OU waste sites with contaminant levels above RALs, because contaminants are removed and exposure pathways are eliminated. The MESC/IC/MNA alternative is the next most protective alternative because exposure pathways are controlled at sites where soil covers exist and contaminants naturally attenuate below RALs within 150 years. The CS/NFA alternative is not protective for sites where contaminants exceed RALs, appropriate risk levels are not met, and because actions would not be taken to control exposure pathways. The NA alternative is not protective of human health and the environment because no action would be taken to confirm exposure risks or control exposure pathways.

5.1.1.2 Contaminant Levels Below RALs

Each alternative requires certain actions to determine that the site contaminants are below RALs. The CS/NFA alternative is most appropriate for 200-MG-1 OU waste sites that have COPCs at levels below RALs because no actions beyond sampling and analysis are needed after determining the risks. The RTD alternative would be protective, but not necessary because the site poses no risk to human health or the environment. The NA alternative cannot demonstrate protectiveness in the absence of characterization data.

5.1.2 Compliance with Applicable or Relevant and Appropriate Requirements

Implementation actions for any selected removal alternative will comply, to the extent practicable, with ARARs. The ARARs are environmental regulations that have been evaluated as potentially pertinent to the removal action. Response actions are required to comply with the substantive aspects of ARARs, not with corresponding administrative requirements. That is, permit applications and other administrative requirements (such as administrative reviews, and reporting and recordkeeping requirements) are considered administrative for actions conducted entirely onsite [40 CFR 300.400(e), "General"] and are not required. The purpose of this section is to identify the key ARARs proposed for the alternatives addressed in this EE/CA. The ARARs will be documented in the CERCLA action memorandum. The proposed ARARs are discussed generally in the following sections and are detailed in Appendix C.

NA. The NA alternative does not comply with ARARs because no actions would be taken to meet federal or state requirements.

MESC/IC/MNA. The MESC/IC/MNA alternative complies with ARARs for sites that have an existing soil cover and have contaminants that will naturally attenuate to levels below RALs within 150 years, or sites with an existing soil cover and current contaminant levels that do not exceed RALs because the appropriate risk levels would be met. The alternative does not comply

for sites with an existing soil cover where contaminants will not naturally attenuate to levels below RALs within this timeframe.

CS/NFA. The CS/NFA alternative complies with ARARs for sites where confirmatory sampling verifies that the appropriate risk levels have been met. Sites where confirmatory sampling shows contaminant levels to be above RALs and appropriate risk levels have not been met, would not comply because no action would be taken to meet federal or state requirements.

RTD. The RTD alternative complies with ARARs for sites where contaminants exceed RALs because contaminated soils and structures would be removed from the waste sites and appropriate risk levels would be met. The alternative also would comply for sites where contaminants are below RALs.

5.1.2.1 Contaminant Levels Exceed RALs

The RTD alternative would comply with ARARs because both radiological and nonradiological contaminated soils would be removed from the waste sites. More potential ARARs would need to be met with this alternative because of excavation, emission control, waste transportation, and waste management action-specific requirements. The MESC/IC/MNA alternative also would comply with ARARs at sites that have an existing soil cover and where contaminants would naturally attenuate to levels below RALs within 150 years because the appropriate risk levels would be met. This alternative does not comply with ARARs at sites where natural attenuation will not result in contaminant levels less than RALs within 150 years or where soil covers do not currently exist. The CS/NFA alternative does not comply with ARARs for sites where contaminants exceed RALs because the appropriate risk levels would not be met and no action would be taken to meet any federal or state regulations. The NA alternative does not comply with ARARs because no action would be taken to meet any federal or state regulations.

5.1.2.2 Contaminant Levels Below RALs

Each alternative requires certain actions to determine that the site contaminants are below RALs. For the MESC/IC/MNA, CS/NFA, and RTD alternatives, confirmatory sampling would be used to demonstrate that appropriate risk levels have been met by attaining RALs. The NA alternative does not comply with ARARs because no action would be taken to identify risk or meet any federal or state regulations.

5.1.2.3 Waste Management Standards

A variety of waste streams may be generated under the proposed removal action alternatives. A waste management plan will be written and included in the removal action work plan. It is anticipated that most of the waste will designate as low-level, dangerous waste, or mixed waste in a solid form and result from implementation of the RTD alternative.

Radioactive waste is governed under the authority of the *Atomic Energy Act of 1954*. The identification, storage, treatment, and disposal of hazardous waste and the hazardous component of mixed waste are governed by RCRA. The State of Washington, which implements RCRA requirements under WAC 173-303, "Dangerous Waste Regulations," has been authorized by the EPA to implement most elements of the RCRA program. The dangerous waste standards for generation and storage will apply to the management of any dangerous or mixed waste generated at the 200-MG-1 OU waste sites. Treatment standards for dangerous or mixed waste subject to RCRA land disposal restrictions are specified in WAC 173-303-140, "Land Disposal Restrictions," which incorporates 40 CFR 268, "Land Disposal Restrictions," by reference.

Waste designated as low-level waste that meets the ERDF acceptance criteria (WCH-191, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*) is assumed to be disposed at the ERDF, which is engineered to meet appropriate performance standards. The ERDF is considered to be onsite for management and/or disposal of waste from removal actions proposed in this document.⁷ There is no requirement to obtain a permit to manage or dispose of CERCLA waste at the ERDF. It is expected that the majority of the waste generated during the removal action proposed in this document can be disposed onsite at the ERDF. In accordance with the ERDF record of decision (EPA/ESD/R10-96/145, *Explanation of Significant Differences: USDOE Environmental Restoration Disposal Facility (ERDF), Hanford Site, Benton County, Washington*), authorization to dispose of waste generated during this removal action at the ERDF will be granted with the issuance of the future action memorandum and through EPA approval of the sampling and analysis plan. Waste that must be sent offsite will be sent to a facility that has been or could be approved by EPA in accordance with 40 CFR 300.440, "Procedures for Planning and Implementing Off-Site Response Actions" for receiving CERCLA waste.

Waste designated as dangerous or mixed waste would be treated as appropriate to meet land disposal restrictions and ERDF acceptance criteria and disposed at the ERDF. The ERDF is an engineered facility that provides a high degree of protection to human health and the environment and meets RCRA minimum technical requirements for landfills, including standards for a double liner, a leachate collection system, leak detection, monitoring, and final cover. Construction and operation of the ERDF was authorized using a separate CERCLA record of decision (EPA/ROD/R10-95/100, *Declaration of the Interim Record of Decision for the Environmental Restoration Disposal Facility*; EPA/AMD/R10-02/030, *Record of Decision Amendment for the Environmental Restoration Disposal Facility*). EPA/ESD/R10-96/145 modified the ERDF record of decision to clarify the eligibility of waste generated during cleanup of the Hanford Site. Per EPA/ESD/R10-96/145, the ERDF is eligible for disposal of any low-level waste, mixed waste, and hazardous/dangerous waste generated as a result of cleanup actions (e.g., removal action waste and investigation-derived waste), provided the waste meets the ERDF waste acceptance criteria and appropriate CERCLA decision documents are in place.

It is anticipated that the MESC/IC/MNA, CS/NFA, and RTD alternatives can be performed in compliance with the waste management ARARs. Waste streams will be evaluated, designated, and managed in compliance with the potential ARAR requirements. Before disposal, waste will be managed in a protective manner to prevent releases to the environment or unnecessary exposure to personnel.

⁷ CERCLA Section 104(d)(4), "...where two or more noncontiguous facilities are reasonably related on the basis of geography, or on the basis of the threat or potential threat to the public health or welfare or the environment, the President may, at his discretion, treat these facilities as one." The preamble to 40 CFR 300 clarifies the stated EPA interpretation that when noncontiguous facilities are reasonably close to one another, and wastes at these sites are compatible for a selected treatment or disposal approach, CERCLA Section 104(d)(4) allows the lead agency to treat these related facilities as one for response purposes. This allows the lead agency to manage waste transferred between such noncontiguous facilities without having to obtain a permit. The ERDF is considered to be onsite for response purposes under this removal action. It should be noted that the scope of work covered in this removal action is for a facility and waste contaminated with hazardous substances. Materials encountered during implementation of the selected removal action that are not contaminated with hazardous substances will be dispositioned by the DOE.

5.1.2.4 Standards Controlling Emissions to the Environment

The proposed removal action alternatives have the potential to generate both radioactive and nonradioactive airborne emissions. An air monitoring plan will be written and included in the removal action work plan. The RTD alternative would have the greatest potential for generation of airborne emissions.

RCW 70.94, "Washington Clean Air Act," requires regulation of radioactive air pollutants. The state implementing regulation WAC 173-480, "Ambient Air Quality Standards and Emission Limits for Radionuclides," sets standards that are as stringent or more so than the Federal *Clean Air Act of 1990* and Amendments, and under the federal implementing regulation, 40 CFR 61, Subpart H, "National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities." The EPA partial delegation of the 40 CFR 61 authority to the State of Washington includes all substantive emissions monitoring, abatement, and reporting aspects of the federal regulation. The state standards protect the public by conservatively establishing exposure standards applicable to even the maximally exposed public individual, be that individual real or hypothetical. To that end, the standards address any member of the public, at the point of maximum annual air concentration in an unrestricted area where any member of the public may be. All combined radionuclide airborne emissions from the Hanford Site are not to exceed amounts that would cause an exposure to any member of the public of greater than 10 mrem/yr effective dose equivalent. The state implementing regulation WAC 246-247, "Radiation Protection – Air Emissions" (which adopts the WAC 173-480 standards and the 40 CFR 61, Subpart H standard) requires verification of compliance with the 10 mrem/yr standard, and would potentially be applicable to the removal action.

WAC 246-247 further addresses sources of radioactive airborne emissions by requiring monitoring of such sources. Such monitoring requires physical measurement of the effluent or ambient air. The substantive provisions of WAC 246-247 that require monitoring of radioactive airborne emissions would potentially be applicable to the removal action.

The above state implementing regulations further address control of radioactive airborne emissions where economically and technologically feasible (WAC 246-247-040(3) and -040(4), "General Standards," and associated definitions). To address the substantive aspect of these potential requirements, best or reasonably achieved control technology could be addressed by ensuring that applicable emission control technologies (those successfully operated in similar applications) would be used when economically and technologically feasible (i.e., based on cost/benefit). If it is determined that there are substantive aspects of the requirement for control of radioactive airborne emissions once ARARs are finalized, then controls will be administered as appropriate using reasonable and effective methods.

The MESC/IC/MNA, CS/NFA, and RTD alternatives are expected to comply with these standards.

5.1.3 Long-Term Effectiveness and Permanence

The long-term effectiveness and permanence criterion refers to the magnitude of remaining risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, after the removal action alternative has been completed and cleanup goals have been met. The completion of the removal action alternative for MESC/IC/MNA is defined as the end

of the attenuation period (up to 150 years) and for RTD it is defined as the day the removal is complete.

NA. The NA alternative was retained for detailed analysis as a baseline description of the effects of taking no action as required by CERCLA regulations. This alternative cannot be considered for the 200-MG-1 OU waste sites because of the absence of characterization data. Secondly, for contaminated sites the NA alternative does not provide any measure of long-term effectiveness and permanence because no actions would be taken to mitigate risks or maintain long-term protection.

MESC/IC/MNA. The MESC/IC/MNA alternative achieves long-term effectiveness via natural attenuation and ICs. This alternative does not provide protection for sites without existing soil covers or where contaminants will not attenuate sufficiently to meet RALs within 150 years.

CS/NFA. The CS/NFA alternative would provide long-term effectiveness and permanence for sites where confirmatory sampling shows contaminant levels do not exceed RALs. The alternative would not be effective or provide permanent protection for human health and the environment at sites where confirmatory sampling shows contaminant levels that exceed RALs.

RTD. The RTD alternative provides long-term effectiveness and permanent protection of human health and the environment because contaminants would be removed from the waste sites and exposure pathways would no longer be present.

5.1.3.1 Contaminant Levels Exceed RALs

The RTD alternative provides the most effective, permanent, long-term protection for human health and the environment because contaminant removal eliminates exposure pathways. The MESC/IC/MNA alternative also would be protective for sites where confirmatory sampling shows contaminants will attenuate to less than RALs within 150 years and the existing soil cover can be maintained during this period. This alternative does not provide effective long-term protection for sites where RALs will be exceeded after 150 years, or where an existing soil cover is not present. The CS/NFA alternative would not provide long-term effectiveness and permanence because waste site sampling would show RALs are exceeded. The NA alternative is not effective and permanent because no action is taken to identify or eliminate risk.

5.1.3.2 Contaminant Levels Below RALs

Each alternative requires certain actions to determine that the site contaminants are below RALs. The CS/NFA alternative is effective and permanent in the long-term for 200-MG-1 OU waste sites that have contaminant levels that do not exceed RALs, because confirmatory sampling and analysis results provide data indicating no risk is present. The MESC/IC/MNA and RTD alternatives also would be effective, but unnecessary, because the waste site poses no unacceptable risk. The NA alternative cannot demonstrate protectiveness in the absence of characterization data.

5.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment

The criterion evaluates performance of anticipated treatment technologies in the removal action. Reduction characteristics include destruction of toxic contaminants, mass reduction, immobilization of contaminants, or reduction of the contaminated media volume.

This criterion focuses on the following factors for each alternative:

- Treatment processes used and the materials treated
- Recycling, reuse, and/or waste minimization used in a given treatment process
- Types and quantities of residuals that remain following treatment
- Possibility that further treatment actions may be needed for residuals
- Extent to which the alternative satisfies the statutory preference for treatment as a principal element.

NA. The NA alternative was retained for detailed analysis as a baseline description of the effects of taking no action as required by CERCLA regulations. This alternative cannot be considered for the 200-MG-1 OU waste sites because of the absence of characterization data. Secondly, the NA alternative does not provide reduction in toxicity, mobility, or volume (TMV) because no treatment is implemented.

MESC/IC/MNA. The MESC/IC/MNA alternative does not provide reduction in TMV because no treatment is implemented at the waste site. No credit is taken for attenuation as a treatment mechanism.

CS/NFA. The CS/NFA alternative does not provide reduction in TMV because no treatment is implemented at the waste site.

RTD. The RTD alternative does not provide reduction in TMV because no treatment is implemented at the waste site.

5.1.4.1 Contaminant Levels Exceed RALs

The NA, MESC/IC/MNA, CS/NFA, and RTD alternatives do not provide reduction in TMV because no treatment is implemented at the waste site.

5.1.4.2 Contaminant Levels Below RALs

Each alternative requires certain actions to determine that the site contaminants are below RALs. The NA, MESC/IC/MNA, CS/NFA, and RTD alternatives do not provide reduction in TMV because no treatment is implemented at the waste site.

5.1.5 Short-Term Effectiveness

This criterion refers to potential adverse effects on human health and the environment during the removal action implementation phase(s). The factors are considered for each alternative are listed below.

- Health and safety of remediation workers and reliability of protective measures taken. This involves any risk resulting from implementation, such as fugitive dust, transportation of hazardous materials, or air quality impacts from off-gas emissions.
- Physical, biological, and cultural impacts that might result from the construction and implementation of the removal action, and whether the impacts can be controlled or mitigated.
- The amount of time required to meet RAOs.

Short-term environmental impacts generally relate to the extent of physical disturbance of a site and its associated habitat. Risks also can be associated with the potential disturbance of sensitive species because of increased human activity in the area.

NA. The NA alternative was retained for detailed analysis as a baseline description of the effects of taking no action as required by CERCLA regulations. The NA alternative does not apply for this criterion.

MESC/IC/MNA. The MESC/IC/MNA alternative would have no adverse impact to human health and the environment for sites with an existing soil cover and contaminant levels that do not exceed RALs. This alternative has potential for worker exposure during sampling, monitoring, or maintenance activities over the attenuation period (up to 150 years) if the contaminant levels exceed RALs. This alternative would prevent adverse impacts to cultural resources and/or threatened or endangered species, and also would minimize disruption of habitat.

CS/NFA. The CS/NFA alternative would have negligible short-term impact to workers for sites where confirmatory sampling shows contaminant levels do not exceed RALs. The alternative would pose minimal risk to workers for sites where confirmatory sampling shows contaminant levels exceed the RALs during the sampling process.

RTD. The RTD alternative could result in short-term risks to workers and the environment during the implementation phase if contaminant levels exceed RALs. The excavation of contaminated soil would inherently increase the potential for a release to the environment, especially to the air. Adherence to appropriate environmental regulations and use of control technologies would mitigate the potential for releases. Risk would be lower at sites where contaminant levels are below RALs and only related to site worker hazards and impacts to the environment associated with site disturbances.

5.1.5.1 Contaminant Levels Exceed RALs

The RTD alternative has the greatest potential short-term impacts to human health and the environment during implementation for 200-MG-1 OU waste sites where contaminant levels exceed RALs. Potential worker and environmental impacts are associated with excavation, fugitive dust, and transportation of contaminated material. The MESC/IC/MNA alternative would have few adverse effects to human health and the environment for sites with an existing soil cover because direct exposure pathways would be controlled. The CS/NFA may have the potential for a short-term impact (through exposure) on workers collecting samples. This alternative would not involve any additional actions that would pose a risk to workers or the environment. The NA alternative does not apply.

5.1.5.2 Contaminant Levels Below RALs

Each alternative requires certain actions to determine that the site contaminants are below RALs. The CS/NFA alternative would have minimal short-term impacts on human health and the environment for waste sites where contaminant levels do not exceed RALs, because no exposure pathways will be present and the site disturbance is minimal. The MESC/IC/MNA alternative also would have minor impact to workers or the environment. The RTD alternative would have more short-term risk to human health and the environment than the other alternatives because excavation involves construction worker hazards and more disturbance of the site. The NA alternative does not apply as discussed previously.

5.2 IMPLEMENTABILITY

This criterion addresses the technical and administrative feasibility of implementing the removal action alternative and the availability of the required services and materials.

The following factors are considered for each alternative.

- Technical feasibility:
 - Likelihood of technical difficulties in constructing and operating the alternative
 - Likelihood of delays because of technical problems
 - Uncertainties related to innovative technologies (e.g., failures)
- Administrative feasibility:
 - Ability to coordinate activities with other offices and agencies
 - Potential for regulatory constraints to develop (e.g., because of uncovering buried cultural resources or encountering endangered species)
- Availability of services and materials:
 - Availability of adequate onsite or offsite treatment storage capacity, and disposal services, if necessary
 - Availability of necessary equipment, specialists, and provisions to ensure obtaining any additional resources, if necessary

NA. The NA alternative was retained for detailed analysis as a baseline description of the effects of taking no action as required by CERCLA regulations. This alternative cannot be considered for the 200-MG-1 OU waste sites because of the absence of characterization data, and regulatory constraints would prevent its implementation.

MESC/IC/MNA. The MESC/IC/MNA alternative is relatively easy to implement, but requires a long-term commitment to monitoring and maintenance of the existing soil cover. The alternative is technically straightforward and would be administratively and technically feasible for sites with an existing soil cover and contaminant levels that would meet RALs within 150 years.

CS/NFA. The CS/NFA alternative is relatively easy to implement for all 200-MG-1 OU waste sites because it is technically and administratively straightforward. The potential for failure or development of new regulatory constraints would be low, because the only activity would be sampling and analysis. The alternative may have technical challenges at sites requiring special sampling equipment (e.g., accessing potentially contaminated soils below thick concrete retention basins or below building foundations).

RTD. The RTD alternative poses the greatest technical and administrative implementation challenge because it requires the most planning, commitment of equipment and personnel, and project coordination. Another important factor that may influence its feasibility is the available treatment and disposal capacity at the ERDF.

5.2.1 Contaminant Levels Exceed RALs

The CS/NFA alternative would be easiest to implement where contamination levels exceed RALs, because the only activity would be sampling and analysis, although this alternative would not provide a reduction in the risk posed by a contaminated waste site. The MESC/IC/MNA alternative will be more difficult to implement, because of the long-term nature of the action. On-going administrative coordination would be required to ensure proper maintenance, monitoring, and compliance. The RTD alternative would be the most difficult to implement because of planning, equipment, and personnel requirements for excavation, demolition, and worker safety. For sites outside the Industrial-Exclusive Area, there may be greater potential for regulatory constraints if cultural resources or endangered species were to be encountered. Sites with large waste removal volumes could be impacted by disposal capacity at the ERDF. The NA alternative is not applicable.

5.2.2 Contaminant Levels Below RALs

Each alternative requires certain actions to determine that the site contaminants are below RALs. The CS/NFA alternative would be easy to implement for waste sites where contamination levels do not exceed RALs, because the only activity required would be sampling and analysis. The MESC/IC/MNA alternative also would be easy to implement. Only sampling and analysis would be performed to determine if COPCs would meet attenuation requirements. The RTD alternative would require the greatest commitment of personnel, equipment, and administrative coordination. The NA alternative is not applicable.

5.3 COST

This criterion considers the cost of implementing a removal action alternative (including capital, operation, maintenance, and monitoring) and assumes the site contaminants are above RALs. The cost evaluation also includes monitoring of any restoration or mitigation measures for natural, cultural, and historical resources. The costs provide a discriminator for deciding between similar protective and implementable alternatives for a specific site. Therefore, the costs are not absolute costs, but rather relational costs for the evaluation of the alternatives.

The cost reference document for this EE/CA (SGW-38383) presents the cost estimates in both 2008 nondiscounted and present worth terms and are summarized in Appendix D. Only the present worth costs are used for comparative purposes in the alternatives analysis. The target accuracy for the cost estimates is -30 percent to +50 percent. The cost estimates were prepared from information available at the time of this study. The actual cost of the project will depend on additional information gained during the removal action phase. While the exact dollar estimates were prepared, present worth estimates in this EE/CA have been rounded to the nearest thousand dollars.

The present worth cost for each applicable alternative is estimated for each waste site for comparison between alternatives. The cost shown for a particular alternative would only be applicable if the waste site met all the conditions for its use. In some cases, because of the specific characteristics of a waste site, an alternative and its associated costs would not apply. For example, the cost for MESC/IC/MNA would not apply to waste sites without an existing soil stabilization cover. The CS/NFA alternative generally has the lowest cost of the three alternatives that could be implemented (it is assumed that the NA alternative would not be

implemented). The RTD alternative is generally higher in cost than CS/NFA. The MESC/IC/MNA alternative typically costs more than other alternatives. However, the RTD costs are highly dependent on site size and waste volume. Thus, RTD in some cases may be more expensive than MESC/IC/MNA.

5.4 APPLICATION OF ALTERNATIVE SELECTION PROCESS

Tables 5-2 and 5-3 presents a summary of the application of the CERCLA evaluation criteria. The two base assumptions considered for each alternative are that contaminant concentrations at the waste site exceed RALs and that contaminant concentrations at the waste site do not exceed RALs.

The preferred alternative selection was based on the CERCLA evaluation criteria and the decision logic shown in Figure 5-1. When comparing and selecting a preferred alternative, present worth cost was used as the final factor in the analysis. Generally, if one alternative offered a greater amount of protection than another for approximately the same cost of implementation, the most protective alternative was selected. The MESC/IC/MNA has a limited application (see Section 4.2), so the cost comparison was focused on RTD and CS/NFA for most waste sites. As the cost difference increased between RTD and CS/NFA, CS/NFA became the preferred alternative, particularly when the site was most likely below RALs.

Removal action alternative selection involved review of available information for specific waste site attributes, as shown in Appendix B. The outcome of this evaluation for each waste site, including removal action costs, is presented in Table 5-4. Some waste sites have been combined because they have a similar type and are adjacent to each other (i.e., rail sites). Other sites were divided into their components because different cost models were used for each component (i.e., septic systems).

Symbols were used in Tables 5-2, 5-3, and 5-4 to illustrate if alternatives met the CERCLA evaluation criteria. The symbols also show the relative ranking of each alternative against the criteria. The symbols in Tables 5-2 and 5-3 demonstrate the general guidelines of how the alternatives ranked against each other for each criterion.

Table 5-2. Comparison of CERCLA Evaluation Criteria to Removal Action Alternatives:
Site Contaminants of Potential Concern Expected to Exceed Removal Action Levels. (2 Pages)

Summary of Comparison of CERCLA Evaluation Criteria Among Alternatives					
CERCLA Evaluation Criteria	NA	MESC/IC/MNA	CS/NFA	RTD	
Effectiveness					
Protective of human health and the environment See Section 5.1.1.1	<input checked="" type="checkbox"/> Not protective because no action taken to characterize risk or control exposure pathways.	② Protective for sites with an existing soil cover and COPCs would be below RALs within 150 years. Exposure pathways must be controlled until attenuation is complete. <input checked="" type="checkbox"/> Does not apply for waste sites without an existing soil cover and/or where COPCs would not be below RALs within 150 years.	<input checked="" type="checkbox"/> Not protective because no action taken to control exposure pathways.	① Most protective because COPCs are removed to levels below RALs.	
Complies with ARARs See Section 5.1.2.1	<input checked="" type="checkbox"/> Cannot demonstrate compliance with ARARs in the absence of characterization data or removal actions.	② Would comply for sites with existing soil cover and COPCs that would be below RALs within 150 years. <input checked="" type="checkbox"/> Does not apply for waste sites without an existing soil cover and/or where COPCs would not be below RALs within 150 years.	<input checked="" type="checkbox"/> Not compliant with ARARs because sampling data do not confirm the site poses no risks and because no action taken to meet federal or state cleanup regulations.	② Would comply with ARARs. More potential ARARs need to be met with this alternative because of excavation, emission controls, and waste management requirements.	
Long-term effectiveness and permanence See Section 5.1.3.1	<input checked="" type="checkbox"/> Does not apply. There are no characterization data and removal actions not taken.	② Effective and permanent for sites with existing soil cover and COPCs would be below RALs within 150 years. <input checked="" type="checkbox"/> Not effective or permanent for waste sites without an existing soil cover and/or where COPCs would not be below RALs within 150 years.	<input checked="" type="checkbox"/> No long-term effectiveness because protective measures are not taken to control exposure pathways.	① Effective and permanent because COPCs would be removed to levels below RALs at completion of the removal action.	
Reduction of TMV through treatment See Section 5.1.4.1	<input checked="" type="checkbox"/> Does not reduce TMV because active treatment actions are not taken.	<input checked="" type="checkbox"/> Does not result in a reduction in TMV because active treatment actions are not taken. No credit is taken for attenuation as a treatment method.	<input checked="" type="checkbox"/> Does not result in a reduction in TMV because active treatment actions are not taken.	<input checked="" type="checkbox"/> Does not result in a reduction in TMV because active treatment actions are not taken at the waste site.	
Short-term effectiveness See Section 5.1.5.1	<input checked="" type="checkbox"/> Does not apply. There are no characterization data and removal actions not taken.	② Minor potential impact to workers or environment during implementation. <input checked="" type="checkbox"/> Not applicable for sites without an existing soil cover and/or where COPCs would not be below RALs within 150 years.	② Minor potential impact to workers or environment during implementation.	③ Greatest potential for impacts to workers and releases to the environment.	

Table 5-2. Comparison of CERCLA Evaluation Criteria to Removal Action Alternatives:
Site Contaminants of Potential Concern Expected to Exceed Removal Action Levels. (2 Pages)

Summary of Comparison of CERCLA Evaluation Criteria Among Alternatives					
CERCLA Evaluation Criteria	NA		MESC/IC/MNA	CS/NFA	RTD
Implementability					
See Section 5.2.1	<input checked="" type="checkbox"/>	Cannot achieve regulatory acceptability in the absence of characterization data.	② Few actions required, but it involves long-term monitoring and maintenance. <input checked="" type="checkbox"/> Not applicable for sites without an existing soil cover and/or where COPCs would not be below RALs within 150 years.	① Easily implementable because only activity is sampling and analysis.	③ Technically and administratively the most difficult alternative to implement.
Cost					
See Section 5.3	Not applicable – No associated cost.		Generally highest cost alternative.	Generally lowest cost alternative.	Generally intermediate cost alternative.

●②③ Circles indicate the criterion is met. The numbers within the circles designate the relative ranking in meeting the criterion among the alternatives. A ranking of No. 1 indicates all aspects of the criterion are best met by the alternative. Criteria of relatively equal ranking receive the same numeric value.

☒ Does not meet the criterion.

ARAR = applicable or relevant and appropriate requirement.

CERCLA = *Comprehensive Environmental Response, Compensation, and Liability Act of 1980.*

CS/NFA = confirmatory sampling/no further action.

COPC = contaminant of potential concern.

MESC/IC/MNA

NA

RAL

RTD

TMV

=

=

=

=

=

= maintain existing soil cover/institutional controls/monitored natural attenuation.

= no action.

= removal action level.

= removal, treatment, and disposal.

= toxicity, mobility, or volume.

Table 5-3. Comparison of CERCLA Evaluation Criteria to Removal Action Alternatives:
Site Contaminants of Potential Concern Expected Below Removal Action Levels. (2 Pages)

CERCLA Evaluation Criteria	Summary of Comparison of CERCLA Evaluation Criteria Among Alternatives			
	NA	MESC/IC/MNA	CS/NFA	RTD
Effectiveness				
Protective of human health and the environment See Section 5.1.1.2	<input checked="" type="checkbox"/> Cannot demonstrate protectiveness in the absence of characterization data.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.	<input type="checkbox"/> Meets the criterion because data are gathered to confirm that the waste site poses no risk and no further action is needed.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.
Complies with ARARs See Section 5.1.2.2	<input checked="" type="checkbox"/> Cannot demonstrate compliance with ARARs in the absence of characterization data.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.	<input type="checkbox"/> Complies with ARARs because sampling data confirm the site poses no risks and meets federal or state cleanup regulations.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.
Long-term effectiveness and permanence See Section 5.1.3.2	<input checked="" type="checkbox"/> Does not apply. There are no characterization data and removal actions not taken.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.	<input type="checkbox"/> Meets the criterion. Sampling data verify no further actions are needed at the waste site.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.
Reduction of TMV through treatment See Section 5.1.4.2	<input checked="" type="checkbox"/> Cannot demonstrate reduction of TMV without active treatment.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.	<input type="checkbox"/> Does not apply because COPCs are below RALs.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.
Short-term effectiveness See Section 5.1.5.2	<input checked="" type="checkbox"/> Does not apply. There are no characterization data and removal actions not taken.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.	<input type="checkbox"/> Does not apply. Removal actions not taken.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.
Implementability				
See Section 5.2.2	<input checked="" type="checkbox"/> Cannot achieve regulatory acceptability in the absence of characterization data.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.	<input type="checkbox"/> Easily implementable because only activity is sampling and analysis.	<input type="checkbox"/> Not evaluated because COPCs are below RALs.

Table 5-3. Comparison of CERCLA Evaluation Criteria to Removal Action Alternatives:
Site Contaminants of Potential Concern Expected Below Removal Action Levels. (2 Pages)

CERCLA Evaluation Criteria	Summary of Comparison of CERCLA Evaluation Criteria Among Alternatives			
	NA	MESC/IC/MNA	CS/NFA	RTD
Cost				
See Section 5.3	Does not apply. There are no characterization data and removal actions not taken.	Not evaluated because COPCs are below RALs.	Low cost alternative.	Not evaluated because COPCs are below RALs.

● Circles indicate the criterion is met. A ranking of No. 1 indicates all aspects of the criterion are best met by the alternative.

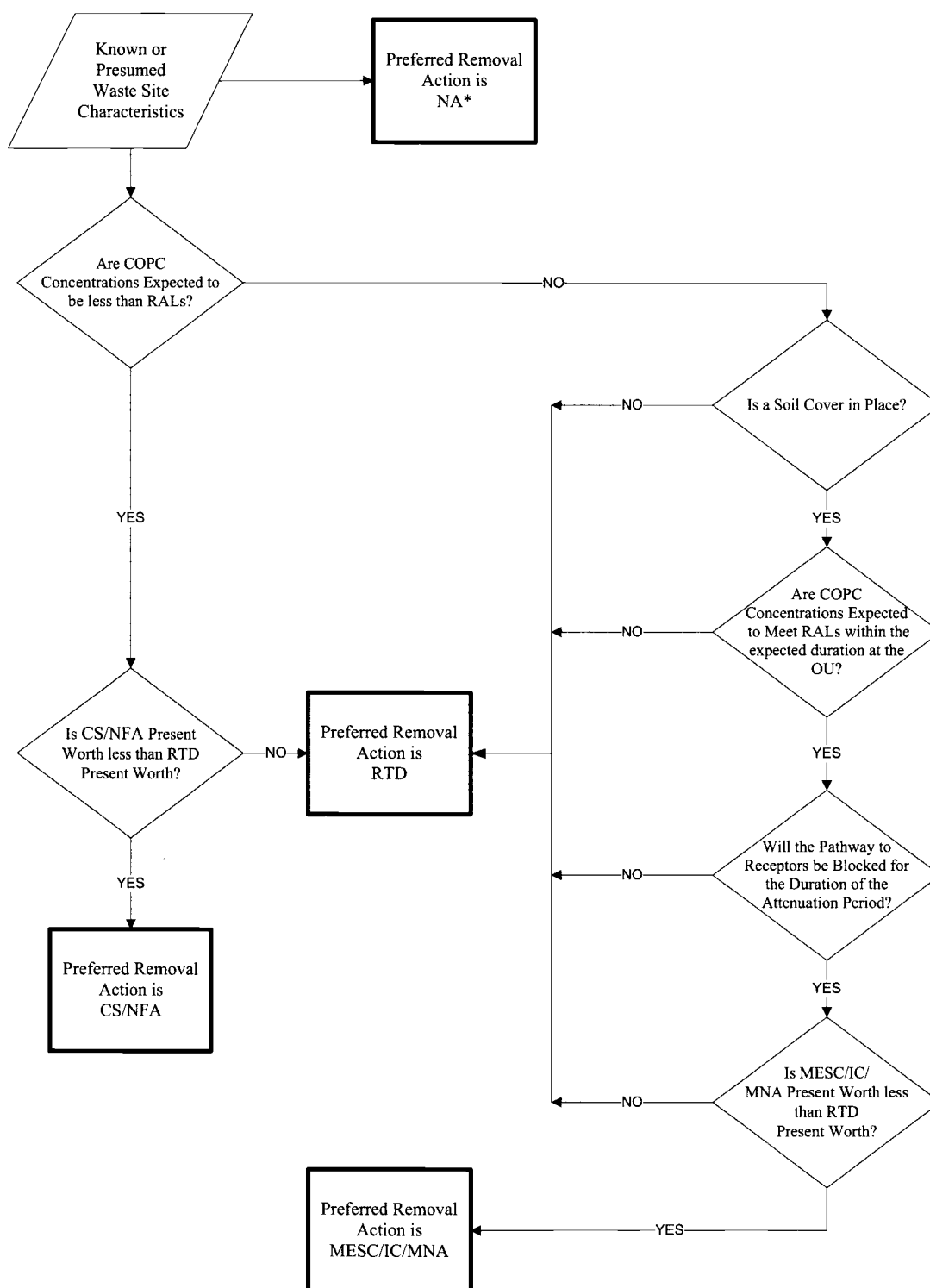
○ The circle with the diagonal bar indicates an alternative that was not evaluated because COPCs concentrations are expected to be below RALs.

☒ Does not meet the criterion.

ARAR = applicable or relevant and appropriate requirement.
CERCLA = *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*.
CS/NFA = confirmatory sampling/no further action.
COPC = contaminant of potential concern.

MESC/IC/MNA = maintain existing soil cover/institutional controls/monitored natural attenuation.
NA = no action.
RAL = removal action level.
RTD = removal, treatment, and disposal.
TMV = toxicity, mobility, or volume.

Figure 5-1. Decision Logic Diagram.



* - NA is included as a CERCLA requirement of the assessment, but is not the preferred removal action for any 200-MG-1 OU waste site.

5.5 NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

In accordance with DOE *National Environmental Policy Act of 1969* (NEPA) policy, CERCLA documents are required to incorporate NEPA values (e.g., transportation, cumulative, offsite, ecological, and socioeconomic impacts) to the extent practicable. For this EE/CA, the NA alternative is excluded from the NEPA values evaluation because it failed to meet the overall protection threshold criterion. None of the other removal alternatives (MESC/IC/MNA, CS/NFA, or RTD) would be expected to create any significant transportation impacts. All waste transportation would occur on the Hanford Site, primarily on roads where public access is restricted.

Cumulative impacts might occur in both the short term and long term because of the interrelationships between the removal action and other 200 Area activities, such as remediation of waste sites and groundwater, deactivation, decontamination and decommissioning of surrounding facilities, and operation of waste treatment or disposal facilities. For this action, short-term cumulative impacts were considered in terms of both air quality and resource allocation. With appropriate work controls, airborne releases from the 200-MG-1 OU waste sites are expected to be minor under all of the removal action alternatives, so the contribution to cumulative impacts on local and regional air quality would be minimal. With respect to resource allocation, the MESC/IC/MNA, CS/NFA, and RTD alternatives as well as other 200 Area activities would require resources in terms of budget, materials, and/or disposal space. The RTD alternative also would require a commitment of resources required for excavation of waste sites.

Initially, the contribution to cumulative impacts would be less for MESC/IC/MNA and CS/NFA and greater for RTD, which would require additional budget resources and some disturbance to ecological resources. The disturbance to ecological resources would be minimized during removal by performing mitigation in accordance with DOE/RL-96-88, *Hanford Site Biological Resources Mitigation Strategy*.

In the long term, the overall cumulative effect of the removal action and other activities in the 200 Area would be to enhance the protection of personnel, the public, and the environment, which is consistent with the values expressed by Ecology, EPA, stakeholders, affected Native American tribes, and the public. The MESC/IC/MNA and CS/NFA alternatives would contribute to this enhanced protection, with CS/NFA creating the greatest and most positive long-term effect.

Finally, none of the alternatives would be expected to adversely affect existing cultural resources or to have any socioeconomic impacts.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome									
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative							
200 CP	Pit/Dumping Area	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$347,000	\$706,000				■	Available information indicates that this site is a large, partially open, gravel pit. The pit has been a source of gravel for various Hanford Site projects, but is no longer in use. Nonhazardous solid waste and construction debris have been reported to have been dispositioned in this area, though a walk-through in 1997 did not support this information. The area where the debris may be lying might have been paved over for the 2704-HV Building’s parking lot. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.			
200-E BP	Burn Pit	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$459,000	\$906,000			■	Available information indicates presence of asbestos and radiological contamination at the surface. There is no stabilization cover and direct exposure pathways may be present. The RTD alternative is most protective of potential receptors (human and ecological) and best meets other CERCLA criteria.
200-E PD	Ditch	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$489,000	\$330,000	\$1,026,000			■	Available information indicates the eastern portion of the ditch was backfilled in 1996, due to spread from contaminated animal feces and particulates. This portion of the ditch is currently posted with Underground Radioactive signs. The ditch is fed from a 107 cm (42 in.) diameter underground pipeline connected to the 282-E, 283-E, and 284-E facilities. During 1997 and 1998, blowdown/boiler condensate from the Johnson Controls Facility also discharged to the ditch. Alternative RTD is the preferred alternative to remove contamination under the backfilled portion of the ditch. The alternative is protective of human and ecological receptors and best meets CERCLA criteria.
200-E-1	Dumping Area	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$168,000	\$402,000			■	Available information indicates this site is contaminated with asbestos and/or asbestos-laden materials buried in a trench located beneath a concrete 90-day storage pad. It is unknown whether the waste was removed before the pad was constructed. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
200-E-101	Experiment/Test Site	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	Note A	Note B	\$180,000	\$636,000			■	Available information indicates this site was used to carry out vadose zone monitoring experiments. There are no known hazardous chemical references and only short-lived radioisotopic tracers were used for experiments. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
200-E-103	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$2,108,000	\$609,000	\$2,176,000			■	This large area site is located south of PUREX and was contaminated several times with radiological and nonradiological constituents related to PUREX operations. A surface stabilization cover is present at this site. The RTD alternative protects human and ecological receptors and best meets other CERCLA criteria.

Ranking of Alternatives for Individual CERCLA Criteria:

- ①②③ Circles indicate the criterion is met. The numbers designate the relative ranking in meeting the criterion among the alternatives.
 ○ Indicates an alternative that was not evaluated because COPC concentrations are expected to be below RALs.
 ☑ Does not meet the criterion.
 ■ Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection				Compliance with ARARs				Long-Term Effectiveness				Reduction in TMV				Short-term Effectiveness				Implementability				Present Worth				Alternative Analysis Outcome				
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative				
200-E-107	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$690,000	\$241,000	\$753,000			■ Available information indicates that this site is the result of windblown contamination related to PUREX operations. Long-lived radionuclides may be present. A surface stabilization cover is present. The RTD alternative protects human and ecological receptors and best meets other CERCLA criteria.		
200-E-109	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$143,000	\$444,000		■ Available information indicates that this site consists of numerous radiologically contaminated areas along Canton Avenue and 12th Street in the 200 East Area, as well as at LERF. Some contamination has been cleaned up, some areas remain posted as contaminated, and some areas have been covered with soil. Local contaminated tumbleweeds may be growth over leaks from buried pipelines in some areas. The RTD alternative protects human and ecological receptors and best meets other CERCLA criteria.			
200-E-110	Dumping Area	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	☐	☐	☑	☐	☐	☐	☑	☐	①	☐	Note A	Note B	\$86,000	\$163,000		■ Available information suggests that this site was surface contaminated at one time with low levels of radioactivity resulting from discarded contaminated tumbleweeds. The tumbleweeds have been removed and the site is no longer posted as contaminated. No soil stabilization cover is present. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.			
200-E-115	Unplanned Release	☑	②	☑	①	☑	②	☑	②	☑	②	☑	①	☑	☑	☑	☑	☑	②	②	③	☑	②	①	③	Note A	\$421,000	\$86,000	\$137,000		■ Available information indicates that surface or underground contamination was once identified at this site. Soil was subsequently removed, although contaminated tumbleweeds continued to be found. A bio barrier and surface stabilization were installed in 2004. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.			
200-E-117	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$86,000	\$105,000		■ Available information indicates the site consists of two steel pipes and valves related to raw water pipelines that extend above ground and have nonremovable beta-gamma contamination. There is no stabilization cover so direct exposure pathways may be present. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.			
200-E-121	Unplanned Release	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	☐	☐	☑	☐	☐	☐	☑	☐	①	☐	Note A	\$678,000	\$241,000	\$642,000		■ Available information indicates that this site consists of a previously cleaned up area of surface radiological contamination. A small area of contaminated tumbleweeds was identified in 2003. A surface stabilization cover is present. Because the previous contamination is most likely short-lived radionuclides, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.			
200-E-123	Unplanned Release	☑	②	☑	①	☑	②	☑	②	☑	②	☑	①	☑	☑	☑	☑	☑	②	②	③	☑	②	①	③	Note A	\$442,000	\$109,000	\$152,000		■ Little is known about this site, although available information indicates that a small area of surface or underground radiological contamination is covered with a stabilization cover. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.			

Ranking of Alternatives for Individual CERCLA Criteria:

- ①②③ Circles indicate the criterion is met. The numbers designate the relative ranking in meeting the criterion among the alternatives.
 ☑ Indicates an alternative that was not evaluated because COPC concentrations are expected to be below RALs.
 ☒ Does not meet the criterion.
 ■ Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome										
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative								
200-E-124	Rail Siding	☑	☑	☑	❶	☑	☑	☑	②	☑	☑	☑	❶	☑	☑	☑	☑	☑	☑	②	③	☑	☑	❶	③	Note A	\$445,000	\$122,000	\$505,000				■ This waste site is currently under a soil stabilization cover because of exposure potential from prior leaks and spills that occurred during unloading operations on a rail line. Long-lived radionuclides may be present. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.	
200-E-125	Unplanned Release	☑	☑	☑	❶	☑	☑	☑	②	☑	☑	☑	❶	☑	☑	☑	☑	☑	☑	☑	②	③	☑	☑	❶	③	Note A	Note B	\$86,000	\$115,000				■ Little is known about this site. Available information indicates that it is currently posted as a CA. There is no surface stabilization cover and direct exposure pathways may be present. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
200-E-128	Unplanned Release	☑	☑	☑	❶	☑	☑	☑	②	☑	☑	☑	❶	☑	☑	☑	☑	☑	☑	☑	②	③	☑	☑	❶	③	Note A	Note B	\$109,000	\$116,000				■ This waste site consists of an area of underground radiation beneath a gravel road. There is no surface stabilization cover and direct exposure pathways may be present. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
200-E-129	Unplanned Release	☑	②	☑	❶	☑	②	☑	②	☑	②	☑	❶	☑	☑	☑	☑	☑	☑	②	②	③	☑	②	❶	③	Note A	\$421,000	\$86,000	\$119,000				■ This waste site consists of a small area of radiologically contaminated soil near a railroad cut. A surface stabilization layer is present. The RTD alternative is most protective of human and ecological receptors and meets other CERCLA criteria.
200-E-13	Dumping Area	☑	☑	❶	☑	☑	❶	☑	☑	☑	❶	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	❶	☑	Note A	Note B	\$347,000	\$706,000			■	Available information indicates that this site contains piles of inert, nonhazardous construction debris. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
200-E-130	Rail Siding	☑	☑	☑	❶	☑	☑	☑	②	☑	☑	☑	❶	☑	☑	☑	☑	☑	☑	☑	②	③	☑	☑	❶	③	Note A	\$445,000	\$122,000	\$390,000				■ This waste site has a soil stabilization cover because of exposure potential from prior releases along the railroad spur. Long-lived radionuclides may be present. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
200-E-139	Unplanned Release	☑	☑	☑	❶	☑	☑	☑	②	☑	☑	☑	❶	☑	☑	☑	☑	☑	☑	☑	②	③	☑	☑	❶	③	Note A	\$662,000	\$241,000	\$626,000				■ Little is known about this waste site. Available information indicates a large URM area on the north side of 8th Street and a smaller URM area on the south side. The area on the south side of the street has a biobarrier and a soil stabilization layer. Contaminated vegetation has been removed from the site several times. Because of the risk of direct exposure pathways on the north side of 8th Street, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
200-E-2	Unplanned Release	☑	☑	❶	☑	☑	❶	☑	☑	☑	❶	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	❶	☑	Note A	Note B	\$168,000	\$755,000			■	Available information indicates that the parking lot site may have received unplanned releases in the form of motor oil or hydraulic fluid. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	

Ranking of Alternatives for Individual CERCLA Criteria:

- ① ② ③ Circles indicate the criterion is met. The numbers designate the relative ranking in meeting the criterion among the alternatives.
 ☑ Indicates an alternative that was not evaluated because COPC concentrations are expected to be below RALs.
 ☑ Does not meet the criterion.
 ■ Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection				Compliance with ARARs				Long-Term Effectiveness				Reduction in TMV				Short-term Effectiveness				Implementability				Present Worth				Alternative Analysis Outcome				
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative				
200-E-26	Unplanned Release	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	①	○	☑	○	①	○	Note A	\$494,000	\$180,000	\$676,000			■	Available information indicates this site was a heavy equipment/truck staging area. Hydrocarbons spills were originally reported in 1996, but by 2001 none of the spills were evident. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
200-E-29	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$818,000	\$312,000	\$828,000			■	Available information indicates the site was radiologically contaminated as the result of mice and ant intrusion. Contamination is suspected to originate from the 241-ER-152 Diversion Box. Long-lived radionuclides may be present. Radiological surveys (1996) showed 7,000 dpm and 300 mrem/h from rodent feces and urine. A backhoe that had been parked on the site had a 50 mrem/h contaminated compartment due to rat nests. The RTD alternative is protective of human and ecological receptors and best meets other CERCLA criteria.	
200-E-43, UPR-200-E-88	Rail Siding	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$445,000	\$202,000	\$902,000			■	Available information indicates these waste sites are the result of radioactive releases in association with storage or staging of contaminated equipment on rail cars in the area. Although a soil cover is present, there is a potential for the presence of long-lived radionuclides. The RTD alternative is most protective of human and ecological receptors in addition to meeting other CERCLA criteria.	
200-E-46	Dumping Area	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$347,000	\$850,000			■	Available information indicates that this site contains debris of a nonhazardous nature. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
200-E-53	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$86,000	\$373,000			■	Available information indicates that this site was originally used to store contaminated equipment. Radiological survey results indicated 600 cpm and 30 mrem/h beta (1.5 mrem/h gamma). Radioactive animal feces were encountered in 1991, 1993, and 1997. Because radionuclides are potentially present and there is no surface cover, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.	
200-E-58	Neutralization Tank	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$494,000	\$180,000	\$480,000			■	Available information indicates that this site is an underground storage tank that received acid waste to be neutralized. Because of the nature of the chemical reactions involved, hazardous chemicals may have leached into the soil and the tank and piping may still contain hazardous waste. The RTD alternative is the most protective of human and ecological receptors and best meets other CERCLA criteria.	
200-E-6	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	\$494,000	\$180,000	\$463,000			■	This septic tank was abandoned in 1998. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	

Ranking of Alternatives for Individual CERCLA Criteria:

- ①②③ Circles indicate the criterion is met. The numbers designate the relative ranking in meeting the criterion among the alternatives.
- ☒ Indicates an alternative that was not evaluated because COPC concentrations are expected to be below RALs.
- ☒ Does not meet the criterion.
- Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome									
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative							
200-E-7	Septic Tank	☒	☒	①	☒	☒	①	☒	☒	①	☒	☒	☒	☒	☒	☒	☒	☒	☒	①	☒	Note A	\$934,000	\$289,000	\$854,000		■	Available information indicates that this tank is part of the 2607-EP System. Current and proposed additions to this system bring its design daily flow to 20,440 L (5,400 gal). The tank was pre-fabricated with a 5678 L (1,500 gal) first chamber and a 3785 L (1,000 gal) second chamber. The associated septic field has been abandoned. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.					
200-W BP	Burn Pit	☒	☒	①	☒	☒	①	☒	☒	①	☒	☒	☒	☒	☒	☒	☒	☒	☒	①	☒	Note A	Note B	\$347,000	\$676,000		■	Available information indicates that this site consists of a large open pit to burn 200 Area office waste and nonradioactive construction debris and tumbleweeds. The site is currently used as a staging area for uncontaminated tumbleweeds from the 200 Area fences, which are burned bi-annually in the spring and the fall. The area is also used as a source of clean backfill (gravel) material. In October 1992, before being used as a source of clean backfill material, radiological surveys and soil sampling were performed (results not available). Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.					
200-W-1	Mud Pit	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	Note B	\$122,000	\$394,000		■	Available information indicates that this area could be related to past drilling operations (dried drilling mud) or could be related to wash-down of plutonium-contaminated equipment. No radiological survey data are available. Because the potential exists for radionuclides and no surface cover is present, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.	
200-W-101	Dumping Area	☒	☒	①	☒	☒	①	☒	☒	①	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	①	☒	Note A	Note B	\$86,000	\$246,000		■	Available information indicates low-level radiological contamination on minor debris at this site. A radiological survey in 2002 only found a small (2,000 dpm) area of contamination on a piece of hose. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
200-W-106	Unplanned Release	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	Note B	\$86,000	\$269,000		■	Available information indicates that radiological soil contamination is present at this old dump site. Radiological survey results recorded 300 cpm at surface, 7,600 cpm at 7.6 cm (3 in.) bgs, and 20,100 cpm at 10 cm (4 in.) bgs. The majority of the contamination has been located within 15 cm (6 in.) of the surface. No surface stabilization or clean-up has been reported. Because the potential exists for radionuclides and no surface cover is present, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.

Ranking of Alternatives for Individual CERCLA Criteria:

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Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection				Compliance with ARARs				Long-Term Effectiveness				Reduction in TMV				Short-term Effectiveness				Implementability				Present Worth				Alternative Analysis Outcome				
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative				
200-W-11	Dumping Area	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$202,000	\$666,000				■	Available information suggests that this site contains nonhazardous and nonradioactive debris. No surface cover is present. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
200-W-12	Dumping Area	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$168,000	\$149,000			■	Available information suggests that this site is associated with the grout/cement slurry testing area, which would indicate nonhazardous waste materials; however, a mound of soil with several polyvinyl chloride pipes arranged as possible vents suggests the presence of an underground tank of unknown nature. Alternative RTD is the preferred alternative because of the potential for a buried tank. This alternative protects human and ecological receptors, meets CERCLA criteria, and is cost-effective.	
200-W-14	Dumping Area	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	\$489,000	\$168,000	\$484,000			■	Available information indicates that this site was a heavy equipment parking area. Only staining of surface soil with petroleum products from leaking vehicles is indicated in several areas. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
200-W-2	Spoils Pile/Berm	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$180,000	\$614,000			■	Available information indicates that this site consists of two bermed areas and several acres of disturbed ground. The location may have been used to clean ventilation equipment. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
200-W-21	Rail Siding	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$489,000	\$168,000	\$612,000			■	Available information indicates that this site consists of two railroad liquid waste unloading platforms that were remediated in 1996. Radiologically contaminated drains were noted before remediation. Because little information is available about the previous remediation, there is a potential presence of long-lived radionuclides. Alternative RTD is the preferred alternative because it is most protective of human and ecological receptors and best meets other CERCLA criteria.	
200-W-22	Foundations/Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$549,000	\$290,000	\$1,850,000			■	Available information indicates that long-lived radionuclides such as uranium and hazardous chemical process waste from several different places (PUREX, REDOX, 100-N reactor, etc.) were released at this site. Although a surface cover is present, there is a potential presence of long-lived radionuclides. Alternative RTD is the preferred alternative because it is most protective of human and ecological receptors and best meets other CERCLA criteria.	
200-W-3	Dumping Area	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$389,000	\$728,000			■	Available information indicates that this site is contaminated, as confirmed with prior soil sampling results that showed detections of PCBs, lead, xylene, and petroleum hydrocarbons from operation of a former filling station. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.	

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		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative						
200-W-33	Dumping Area	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	Note A	Note B	\$597,000	\$1,842,000		■	Available information suggests that this site contains debris of a nonhazardous nature. There is some evidence of burning and oil spills. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
200-W-51	Septic Tank	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	Note A	\$489,000	\$168,000	\$346,000		■	This septic tank was abandoned in 1994 in accordance with WAC 246-272A-0300. The tank walls have been collapsed and the location is backfilled and compacted with clean backfill. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
200-W-51	Septic Tank Drain Field	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	Note A	\$445,000	\$122,000	\$415,000		■	The septic tank associate with this drain field was abandoned in 1994 in accordance with WAC 246-272A-0300. The septic system received nonhazardous sanitary effluent. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
200-W-53	Unplanned Release	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	Note A	\$757,000	\$309,000	\$765,000		■	Available information indicates that this site is an area where radiologically contaminated surface soil was scraped and put in the 207-T Retention Basin. The original area is still posted as a URM. Because the contamination is presumed to have been removed, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
200-W-54	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$506,000	\$2,210,000		■	Available information indicates that this site is a large irregular area of surface contamination associated with S/SX Tank Farm activities. Type of waste and concentration of potential radioactive or hazardous chemical wastes are poorly known, but survey data showed readings up to 20,000 cpm. The RTD alternative is best protective of human and ecological receptors and meets other CERCLA criteria.
200-W-55	Dumping Area	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	Note A	Note B	\$122,000	\$310,000		■	Available information indicates the site consists of debris that is nonhazardous. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
200-W-6	Dumping Area	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$180,000	\$795,000		■	Available information suggests that this site has nonradiological soil contamination of a potentially hazardous chemical nature. Chemicals are suspected to be solvents and paint waste from the paint shop located on site. The RTD alternative is most protective of human and ecological receptors and meets CERCLA criteria.

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Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome									
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative							
200-W-63	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$421,000	\$86,000	\$317,000				■ Available information indicates that a concrete pad at this site was used to store radioactively contaminated equipment and tanks in the early 1980s. A radiological survey of the area in 1997 confirmed beta/gamma and alpha contamination (radiological survey results showed 5,000 to 300,000 dpm beta/gamma and 3,000 to 7,000 dpm alpha). A surface stabilization layer was added before 1999. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.	
200-W-64	Foundation	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$86,000	\$871,000				■ Available information indicates this site is part of the foundation of a laundry facility that was constructed in 1952. A prior facility built on the same foundation used to be a mask-washing facility. Fixed radioactive contamination measured at 9,000 dpm beta/gamma was found at the site and assumed to be from the decontamination of PPE. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
200-W-67	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$421,000	\$86,000	\$287,000				■ Available information indicates this site was contaminated from an unknown source. Radiological surveys in the area in 1998 showed readings of 6 to 11 mrem/h and 500 to 70,000 cpm. An ant hill read 3,000 cpm. A surface stabilization layer was subsequently installed. The RTD alternative is most protective of human and ecological receptors and best meets CERCLA criteria.
200-W-75	Experiment/Test Site	☑	②	☑	①	☑	②	☑	②	☑	②	☑	①	☑	☑	☑	☑	☑	②	②	③	☑	②	①	③	Note A	\$442,000	\$109,000	\$358,000				■ Available information indicates this site consisted of several calibration silos. The calibration silos contained radioactive sources consisting of known quantities of Co-60, Sr-90, Ru-106, and Ce-144 in sealed capsules. The site is posted as a URM, which suggests the sources may still be inside the silos. The RTD alternative is the preferred alternative to be most protective of human and ecological receptors and meet other CERCLA criteria.
200-W-80	Spoils Pile/Berm	☑	②	☑	①	☑	②	☑	②	☑	②	☑	①	☑	☑	☑	☑	☑	②	②	③	☑	②	①	③	Note A	\$421,000	\$86,000	\$279,000				■ Available information indicates that this site originally consisted of a mound of dirt with asphalt chunks and was posted as a CA. A radiological survey in 1999 did not identify any surface contamination. The site may be waste from a parking lot expansion. The original mound has been flattened and currently has a surface stabilization cover. The RTD alternative is protective of human and ecological receptors and meets other CERCLA criteria.

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		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative				
200-W-81; UPR-200-W-58	Rail Siding	☒	☒	☒	❶	☒	☒	☒	❷	☒	☒	☒	❶	☒	☒	☒	☒	☒	☒	❷	❸	☒	☒	❶	❸	Note A	Note B	\$453,000	\$2,084,000			■ Available information indicates these waste sites are the result of releases associated with transport of radioactive materials using rail cars. Windblown contaminated tumbleweed fragments from the nearby burial grounds appear to have also contributed to past contamination. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.		
200-W-82	Pump Station/ Product Piping	☒	☒	☒	❶	☒	☒	☒	❷	☒	☒	☒	❶	☒	☒	☒	☒	☒	☒	❷	❸	☒	☒	❶	❸	Note A	Note B	\$168,000	\$428,000			■ Available information suggests that this site was a liquid waste unloading station built to assist trucks unloading waste from the 300 Area to the 216-T-27 and 216-T-28 Cribs. Based on the characteristics of the waste discharged to the T-28 Crib, this site may have had spills of radioactive and hazardous chemical constituents. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.		
200-W-83, UPR-200-W-41, 44, 46	Rail Siding	☒	☒	☒	❶	☒	☒	☒	❷	☒	☒	☒	❶	☒	☒	☒	☒	☒	☒	❷	❸	☒	☒	❶	❸	Note A	Note B	\$527,000	\$2,775,000			■ Existing information indicates these waste sites are the result of releases in association with transport of materials using rail cars. With a potential for the presence of long-lived radionuclides, the RTD alternative is the preferred alternative because it is most protective of potential human and ecological receptors.		
200-W-86	Unplanned Release	☒	☒	☒	❶	☒	☒	☒	❷	☒	☒	☒	❶	☒	☒	☒	☒	☒	☒	❷	❸	☒	☒	❶	❸	Note A	\$421,000	\$86,000	\$106,000			■ Available information indicates that this site is associated with contamination around a former light pole at the intersection of the U Plant railroad spur and Bridgeport Avenue. There are no radiological surveys of the area. The light pole was removed in 2001 and the area was covered with clean backfill. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.		
200-W-90	Unplanned Release	☒	☒	☒	❶	☒	☒	☒	❷	☒	☒	☒	❶	☒	☒	☒	☒	☒	☒	❷	❸	☒	☒	❶	❸	Note A	\$421,000	\$86,000	\$106,000			■ Available information indicates this site is associated with UPR-200-W-63. This site consists of three URM areas; two across from the 218-W-2A Burial Ground and one across from the T Tank Farm. No current radiological surveys are available. No clean-up activities are reported for this site. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.		
200-W-92	Dumping Area	☒	☒	☒	❶	☒	☒	☒	❷	☒	☒	☒	❶	☒	☒	☒	☒	☒	☒	❷	❸	☒	☒	❶	❸	Note A	\$489,000	\$168,000	\$633,000			■ Available information indicates that this site is contaminated based on radiological survey readings of 1,600,000 dpm per 100 cm² of beta/gamma and 14,000 dpm per 100 cm² of alpha. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets CERCLA criteria.		

Ranking of Alternatives for Individual CERCLA Criteria:

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- ☑ Does not meet the criterion.
- Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome								
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative						
200-W Ash Disposal Basin	Coal Ash Pit	☒	☒	①	☒	☒	①	☒	☒	①	☒	☒	☒	☒	☒	☒	☒	☒	☒	①	☒	Note A	Note B	\$347,000	\$706,000		■	Available information indicates that this site received coal ash slurry and ash from the operation of the coal fired 284-W Powerhouse. Later, the site received trucked material dredged from the 200-W Ash Pit. The waste was found to be nondangerous, non-corrosive, and nonregulated under the <i>Washington Administrative Code</i> . Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
207-B	Retention Basin	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	Note B	\$429,000	\$2,523,000		■	Available information indicates that this retention basin received an unknown amount of waste that was subsequently diverted to the 216-B-2-1, B-2-2, and B-2-3 Ditches. The side walls of the basin have been contaminated by several radiological effluent releases and were coated with a tar-like coating in 1953 in order to seal the contaminated area. Contamination was found outside the basin in 1999 at 480,000 dpm beta/gamma. Because of the potential presence of long-lived radionuclides as well as potential hazardous chemical waste, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
207-SL	Retention Basin	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	Note B	\$180,000	\$690,000		■	This site consists of a large below-ground basin that is divided into two 95,000 L (25,000 gal) holding basins. Before 1955, the site received low-level radioactive waste and discharged it to the 216-S-19 Pond. From 1955 to 1995, the effluent was discharged to the 216-S-26 Crib. After 1995, nonradioactive, nonhazardous liquid effluents from the 222-S Laboratory, the 222-SA Laboratory, the 219-S Operating Gallery sump, and the package boiler unit flowed into the below-ground basins for retention before transfer to the Treated Effluent Disposal Facility. The area has signs warning of surface radiation contamination. Because of the potential presence of radionuclides in the below ground basin walls and floor, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
209-E-WS-3	Valve Pit	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	Note B	\$109,000	\$316,000		■	Available information indicates this site is a valve pit associated with the 190 L (50 gal) 209-E-TK-111 Holding Tank located beneath the valve pit. The tank held condensate with low levels of plutonium before release to the 216-C-7 Crib. The tank is currently considered to contain condensate water containing low levels of plutonium. A surface stabilization cover is not present. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.

Ranking of Alternatives for Individual CERCLA Criteria:

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Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome									
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative							
216-A-1	Crib	☒	☒	①	☒	☒	①	☒	☒	①	☒	☒	☒	☒	☒	☒	☒	☒	☒	①	☒	Note A	\$494,000	\$180,000	\$1,051,000		■	This site consists of the 216-A-1 Crib which received about 98,000 L (26,000 gal) of start-up waste from the PUREX facility. The bottom of the cribs is approximately 4.6 m (15 ft) bgs. In 1992, contaminated soil was scraped and consolidated and the site was backfilled and a stabilization cover is in place. Effluent discharged to the site contained U-238, arsenic, and uranium. Based on the assumption that current contaminant concentrations in the crib will not exceed PRCLs, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.					
216-A-18	Trench	☒	☒	①	☒	☒	①	☒	☒	①	☒	☒	☒	☒	☒	☒	☒	☒	☒	①	☒	Note A	\$494,000	\$180,000	\$1,028,000		■	Available information indicates that this trench received about 490,000 L (130,000 gal) of start-up waste from the PUREX 202-A facility. No crib structure was built and the bottom of the trench is reported to be 4.9 m (16 ft) bgs. The site was surface stabilized in 1990. Effluent discharged to the site contained U-238, arsenic, and uranium. Based on the assumption that current contaminant concentrations in the trench will not exceed PRCLs, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.					
216-A-20	Trench	☒	☒	①	☒	☒	①	☒	☒	①	☒	☒	☒	☒	☒	☒	☒	☒	☒	①	☒	Note A	\$494,000	\$180,000	\$612,000		■	Available information indicates this trench received about 950,000 L (250,000 gal) of PUREX start-up waste and cooling water from the 241-A-431 Building contact condenser via the 216-A-34 Ditch. The site was backfilled when its retention capacity was reached and was deactivated in 1955 by removing over-ground piping. A surface stabilization layer was installed in 1990. In 2007, more surface contamination was backfilled with clean soil. Before stabilization, the bottom of the trench was reported to be 4.6 m (15 ft) bgs. Effluent discharged to the site contained U-238, arsenic, manganese, and uranium. Based on the assumption that current contaminant concentrations in the trench will not exceed PRCLs, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.					
216-A-28	Crib	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	Note B	\$180,000	\$405,000		■	Available information indicates that this crib received about 30,000 L (8,000 gal) of liquid waste from the 203-A Sumps and heating coil condensate from UNH tanks in the 203-A Tank Farm. The excavation is a truncated cone 6 m (20 ft) across at grade and 1 m (3 ft) across at a depth of 3.4 m (11 ft) bgs. The site is reported to have received radioactive waste, UNH, and associated process chemical waste. Partial excavation of the site was carried out in 1981, although a surface stabilization layer is not present. The RTD alternative is most protective of human and ecological receptors and best meets CERCLA criteria.

Ranking of Alternatives for Individual CERCLA Criteria:

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Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome									
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative							
216-A-3	Crib	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	①	○	Note A	\$494,000	\$180,000	\$868,000			■	Available information indicates this crib received about 3,000,000 L (800,000 gal) of silica-gel regeneration waste and pump house drainage from the 203-A Building and UNH storage pit. The bottom of the crib is reported to be 4.9 m (16 ft) bgs and there is no surface stabilization layer. Effluent discharged to the site contained Cs-137, Sr-90, Ru-106, UNH, and uranium. Based on the assumption that current contaminant concentrations in the Crib will not exceed PRCLs, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
216-A-34	Ditch	☒	②	☒	①	☒	②	☒	②	☒	②	☒	①	☒	☒	☒	☒	☒	②	②	③	☒	②	①	③	Note A	\$494,000	\$180,000	\$1,378,000			■	Available information indicates that this ditch received an unknown amount of cooling water from the contact condenser in the 241-A-431 Building. The ditch was 85 m (280 ft) long, 9 m (30 ft) wide and 2 m (6 ft) deep and was surface stabilized in 1990. The site reportedly received less than 1 Ci total beta activity. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
216-A-40	Retention Basin	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$494,000	\$180,000	\$1,589,000			■	Available information indicates that about 950,000 L (250,000 gal) of contaminated cooling water and steam condensate from the 244-AR Vault were diverted to the retention basin when the effluent was above standard release limits for the 216-B-3 or 216-A-25 Ponds. The retention bladders failed in 1979 and the basin was removed from service. Effluent discharged to the site contained Cs-137, Sr-90, U-239, Tc-99, arsenic, cadmium, lead, mercury, selenium, and Aroclor-1254. Contaminated soil from the adjacent Soil Contamination Area (UPR-200-E-143 and remnants of UPR-200-E-100) was scraped and placed into the east end of the basin. The remainder of the basin was backfilled with clean material. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
216-A-42	Retention Basin	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$494,000	\$180,000	\$4,575,000			■	Available information indicates that this retention basin received an unknown amount of cooling water or steam condensate from PUREX that was contaminated above standard release limits for disposal to Gable Mountain Pond, B Pond, or various cribs. The trench consisted of a rubber-lined excavation 104 m (342 ft) long, 10 m (30 ft) wide, and 6 m (20 ft) deep that was divided into three compartments by internal berms. The basin was deactivated in 1997 when PUREX was closed. In 1984, 40,000 cpm was found inside the fenced area and 3,000 cpm was found outside the fenced area, presumably related to windblown contamination. The area was leveled and backfilled in 2001, although a surface stabilization layer is not reported to be present. Effluent discharged to the site contained Cs-137, Sr-90, U-238, Tc-99, arsenic, cadmium, lead, mercury, selenium, and PCB-1254. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.

Ranking of Alternatives for Individual CERCLA Criteria:

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Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome										
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD					
Key Site Information and Rationale for Selected Alternative																																		
216-A-9	Crib	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$494,000	\$318,000	\$4,374,000				■ Available information indicates that this crib was used to dispose of about 980 million L (260 million gal) of PUREX acid fractionator condensate and cooling water and liquid N Reactor decontamination waste. The crib was an excavation 130 m (420 ft) long, 6 m (20 ft) wide, and 4 m (13 ft) deep. The site was backfilled and surface stabilized in 1993. The RTD alternative is most protective of human and ecological receptors and best meets CERCLA criteria.	
216-B-2-1	Ditch	☑	②	☑	①	☑	②	☑	②	☑	②	☑	①	☑	☑	☑	☑	☑	☑	②	②	③	☑	②	①	③	Note A	\$494,000	\$318,000	\$2,481,000				■ Available information indicates that this ditch received an unknown amount of steam condensate, cooling water, and chemical sewer waste from B Plant. The ditch was originally 1100 m (3,500 ft) long, 4.6 m (15 ft) wide, and 2 m (6 ft) deep. A leak in 1963 resulted in contamination of the first 300 m (1,000 ft) of the ditch with waste that had a dose rate of 500 mrem/h. The remaining 760 m (2,500 ft) of the ditch became the 216-B-2-2 Ditch. The ditch has been backfilled and surface stabilized. Because of the potential presence of radionuclides and hazardous chemical waste at a shallow depth, the RTD alternative is most protective of human and ecological receptors and best meets CERCLA criteria.
216-B-2-2	Ditch	☑	②	☑	①	☑	②	☑	②	☑	②	☑	①	☑	☑	☑	☑	☑	☑	②	②	③	☑	②	①	③	Note A	\$494,000	\$318,000	\$2,481,000				■ Available information indicates that this ditch was originally part of the 216-B-2-1 Ditch. It received an unknown amount of steam condensate, cooling water, and chemical sewer waste from B Plant. About 1,000 Ci of Sr-90 was released to the ditch in 1970. The ditch is described as 1,100 m (3,600 ft) long, 4.6 m (15 ft) wide, and 2.4 m (8 ft) deep, which includes 1,100 ft of new ditch, required connecting to the 207-B Retention Basin. The ditch has been backfilled and surface stabilized. A characterization borehole near the head end of the ditch returned 1,600,000 dpm from a depth of 2.4 m (8 ft) bgs. Based on the potential for radionuclides and hazardous chemical waste present at a shallow depth, the RTD alternative is most protective of human and ecological receptors and best meets CERCLA criteria.
216-B-2-3	Ditch	☑	②	☑	①	☑	②	☑	②	☑	②	☑	①	☑	☑	☑	☑	☑	☑	②	②	③	☑	②	①	③	Note A	\$527,000	\$318,000	\$2,793,000				■ Available information indicates that an unknown amount of waste was disposed to this ditch from the 207-B Retention Basin. The ditch is reported to be 1,200 m (4,000 ft) long, 6 m (20 ft) wide, and 2 m (6 ft) deep. The ditch was built as a replacement for the 216-B-2-2 Ditch and received similar waste. Because of the potential for radionuclides and hazardous chemical waste present at a shallow depth, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.

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		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative			
216-B-3-1	Ditch	☒	②	☒	①	☒	②	☒	②	☒	②	☒	①	☒	②	☒	②	③	☒	②	①	③	Note A	\$489,000	\$330,000	\$2,086,000			■ Available information indicates this site received about 150 million L (40 million gal) of B Plant and PUREX process waste. The ditch is 975 m (3,200 ft) long, 2 m (6 ft) wide, and 2 m (6 ft) wide. A leak in 1964 contaminated the ditch and the 216-B-3 Pond with about 2,500 Ci of fission products. The ditch was then backfilled and surface stabilized. Because of the potential presence of radionuclides and hazardous chemical waste at a shallow depth, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
216-B-3-2	Ditch	☒	②	☒	①	☒	②	☒	②	☒	②	☒	①	☒	②	☒	②	③	☒	②	①	③	Note A	\$542,000	\$429,000	\$2,449,000			■ Available information indicates this site received about 150 million L (40 million gal) of B Plant and PUREX process waste. The ditch, built to replace the 216-B-3-1 Ditch, is 1,100 m (3,700 ft) long, 4.6 m (15 ft) wide, and 2.4 m (8 ft) deep. The ditch was contaminated in 1970 with about 1,000 Ci of Sr-90 and was then backfilled and surface stabilized. Dose rates at the time of the contaminating event were 450 mrem/h. Because of the potential presence of radionuclides and hazardous chemical waste, the RTD alternative is most protective of human and ecological receptors and best meets the CERCLA criteria.
216-B-3-3	Ditch	☒	②	☒	①	☒	②	☒	②	☒	②	☒	①	☒	②	☒	②	③	☒	②	①	③	Note A	\$489,000	\$168,000	\$1,828,000			■ Available information indicates that this site received an unknown quantity of B Plant and PUREX process waste. The ditch is 1,100 m (3,700 ft) long, 6 m (20 ft) wide, and 2 m (6 ft) deep. The site has been backfilled and has a surface stabilization layer. Characterization sampling shows the presence of hazardous chemical waste and short-lived radionuclides. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.

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Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome								
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative						
216-B-59/59B	Trench/ Retention Basin	☑	②	☑	①	☑	②	☑	②	☑	②	☑	①	☑	☑	☑	☑	②	②	③	☑	②	①	③	Note A	\$905,000	\$724,000	\$2,278,000			■	Available information indicates the 216-B-59 Trench received about 473,000 L (125,000 gal) of emergency cooling water from the 221-B Building. This coolant had radionuclide concentrations exceeding that allowed for existing ponds. Originally an open, unlined ditch, a hypalon liner was subsequently installed and later upgraded to a concrete liner. The lined trench is known as the 216-B-59B Trench and received an unknown amount of cooling water from the 221-B Building. The original unlined trench was reported to be 120 m (400 ft) long, 6 m (20 ft) wide, and 3.6 m (12 ft) deep. The concrete-lined trench, built over the open trench, is reported to be 94 m (307 ft) long, 16 m (52 ft) wide, and 3 m (9.8 ft) deep. Only the original trench would have discharged waste to the vadose zone. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
216-C-10	Crib	☑	③	①	③	☑	③	①	③	☑	③	①	③	☑	③	③	③	☑	③	③	③	☑	③	①	③	Note A	\$494,000	\$180,000	\$519,000		■	Available information indicates that this crib received about 908,000 L (240,000 gal) of process condensate from the 201-C Facility. The bottom of the crib was reported to be 2.1 m (7 ft) bgs before backfilling and surface stabilization. Based on the assumption that current contaminant concentrations in the crib will not exceed PRCLs, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
216-C-3	Crib	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$494,000	\$180,000	\$497,000			■	Available information indicates that this crib received about 4,900,000 L (1,300,000 gal) of acidic liquid process waste from the 201-C, 215-C, and 271-C Buildings. The composition of the process waste is unknown. The bottom the crib was reported to be 3.1 m (10 ft) bgs before backfilling and surface stabilization. Because of the potential for radionuclides present at a shallow depth, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
216-C-5	Crib	☑	③	①	③	☑	③	①	③	☑	③	①	③	☑	③	③	③	☑	③	③	③	☑	③	①	③	Note A	\$494,000	\$180,000	\$533,000		■	Available information indicates this crib received about 38,000 L (10,000 gal) of high salt cold run waste from the 201-C, 241-CX-71, and 200-E-41 facilities. The bottom of the crib was 4.8 m (16 ft) bgs before backfilling and surface stabilization. Based on the assumption that current contaminant concentrations in the crib will not exceed PRCLs, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
216-C-6	Crib	☑	③	①	③	☑	③	①	③	☑	③	①	③	☑	③	③	③	☑	③	③	③	☑	③	①	③	Note A	\$494,000	\$180,000	\$518,000		■	Available information indicates this crib received about 530, 000 L (140,000 gal) of acidic and radioactive PUREX and REDOX process condensate. The bottom of the crib was 4.8 m (16 ft) bgs before surface stabilization activities. Based on the assumption that current contaminant concentrations in the crib will not exceed PRCLs, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.

Ranking of Alternatives for Individual CERCLA Criteria:

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- Indicates an alternative that was not evaluated because COPC concentrations are expected to be below RALs.
- ☑ Does not meet the criterion.
- Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome									
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative							
216-C-7	Crib	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$494,000	\$180,000	\$516,000			■	Available information indicates this crib received about 61,000 L (16,000 gal) of radioactive waste from the 209-E Building Critical Mass Laboratory. This waste was reported to contain plutonium, uranium, and neutron poisons such as boron, cadmium, and gadolinium. Surface stabilization is reported to be present. Because of the potential presence of long-lived radionuclides and hazardous chemicals, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
216-C-9	Pond	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	○	○	☒	○	①	○	Note A	\$3,822,000	\$1,137,000	\$12,740,000		■	Available information indicates this pond received more than 1,020 million L (270 million gal) of cooling water from the 201-C Hot Semiworks Facility. Part of the dried up pond was used as a solid waste burial ground for Semiworks decommissioning waste. The site has been backfilled and surface stabilized. A survey in 1978 showed no radioactive contamination along the margins of the pond. Because the pond received primarily cooling water and no contamination is documented, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
216-S-16D	Ditch	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	○	○	☒	○	①	○	Note A	\$489,000	\$168,000	\$885,000		■	This site starts from the southwest corner of the 200 West Area perimeter fence and terminates at the eastern edge of the 216-S-16 Pond. The site is marked and posted with URM signs. The ditch was used for disposal of process cooling water and steam condensate from the REDOX facility from 1957 to 1967. In 1967, the site received condenser and vessel cooling water from concentrator boil-down operations in the 202-S Building. In 1973, the ditch was connected to the 216-U-9 Ditch, so 216-U-10 overflow could reach the 216-S-16 Pond. The site is associated with the REDOX facility, 216-S-16 Pond, 216-U-9 Ditch, and 200-W-155-PL Pipeline. The ditch has been backfilled and surface stabilized. The depth of the site is approximately 0.9 m (3 ft). Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
216-S-19	Pond	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	○	○	☒	○	①	○	Note A	\$2,067,000	\$878,000	\$5,799,000		■	Available information indicates this site received an unknown quantity of ventilation cooling water and miscellaneous laboratory sink waste from 222-S. Core samples were taken near inlet pipe at depths of 24 - 30 inches in 1983. The maximum reading at that time was 300 cpm. The beta/gamma radioactivity has decayed and there is no activity currently detectable with field instruments. Based on the waste stream characteristics, it is suspected that COPC concentrations would be below PRCLs. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	

Ranking of Alternatives for Individual CERCLA Criteria:

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- Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome								
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative						
216-S-22	Crib	☒	☉	①	☉	☒	☉	①	☉	☒	☉	①	☉	☒	☉	①	☉	☒	☉	①	☉	Note A	\$494,000	\$180,000	\$600,000		■	Available information indicates that this crib received about 98,000 L (26,000 gal) of liquid waste from the acid recovery facility in the 293-S Building. Waste was reported to contain mobile constituents including tritium, nitrate, and sodium. The bottom of the crib is 3 m (9.8 ft) bgs. The crib has been backfilled, although a surface stabilization layer is not present. Based on the waste stream characteristics, it is suspected that COPC concentrations would be below PRCLs. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
216-S-26	Crib	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$494,000	\$180,000	\$983,000		■	Available information indicates this crib received about 163 million L (43 million gal) of liquid waste from the 222-S Laboratory. This waste was reported to include acetone, nitric acid, sulfuric acid, and hydrofluoric acid, as well as various radionuclides. A proximal groundwater monitoring well shows elevated alpha, total uranium, and U-238. The bottom of the crib was 3.1 m (10 ft) bgs. The crib has been backfilled, although a surface stabilization layer is not present. Because of the potential presence of radionuclides and hazardous chemicals, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
216-S-4	French Drain	☒	☉	①	☉	☒	☉	①	☉	☒	☉	①	☉	☒	☉	①	☉	☒	☉	①	☉	Note A	\$494,000	\$180,000	\$556,000		■	Available information indicates that this French drain received about 1 million L (265,000 gal) of condensate and cooling water from the S Tank Farm. The French drain reaches a depth of 5.1 m (16.8 ft) bgs and has been backfilled and surface stabilized. Potential contaminants discharged to the site include Tc-99, Sr-90, tritium, U-238, silver, arsenic, mercury, nitrate, and chromium VI. Based on the assumption that current contaminant concentrations in the crib will not exceed PRCLs, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
216-S-8	Trench	☒	☉	①	☉	☒	☉	①	☉	☒	☉	①	☉	☒	☉	①	☉	☒	☉	①	☉	Note A	\$494,000	\$180,000	\$1,282,000		■	Available information indicates this site received about 9,800,000 L (2,600,000 gal) of unirradiated start-up waste from the 202-S Building, with an estimated concentration of 0.2 g of uranium per liter. The total amount of unirradiated uranium (U-238) discharged is reported to be about 193 kg. The bottom of the trench was at a depth of 7.6 m (25 ft) bgs before backfilling and surface stabilization. Based on the assumption that current contaminant concentrations in the crib will not exceed PRCLs, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				

Ranking of Alternatives for Individual CERCLA Criteria:

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Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection				Compliance with ARARs				Long-Term Effectiveness				Reduction in TMV				Short-term Effectiveness				Implementability				Present Worth				Alternative Analysis Outcome				
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative				
216-T-20	Trench/Minor debris	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$489,000	\$168,000	\$163,000			■ Available information indicates this site is a single-use pit that collected contaminated nitric acid waste from the 241-TX-155 Diversion Box. The discharge to the pit was about 19,000 L (5,000 gal). The bottom of the pit was at a depth of 3.1 m (10 ft bgs). It has been backfilled, although no surface stabilization is reported. Because of the potentially hazardous nature of the acidic waste, as well as the potential for radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.		
216-T-4A	Pond	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	○	○	☒	○	①	○	Note A	\$2,790,000	\$1,386,000	\$7,839,000		■	Available information indicates this pond received more than 42 million L (11 million gal) of cooling water and steam condensate from the 221-T and 224-T Buildings, as well as cooling water and steam condensate from the 242-T Evaporator. According to available information, this site has been exhumed, backfilled, stabilized, and re-vegetated to make room for the 218-W-2A Burial Ground. Because concentrations of COPCs are anticipated to be below PRCLs, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		
216-Z-4	Trench	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$494,000	\$180,000	\$447,000			■ Available information suggests this site is associated with a capped pipeline from the 231-Z Building, and the 231-W-151 Vault sump. This site was temporarily used to receive liquid laboratory waste from the 231-Z Building. This 4.6 m (15 ft) deep trench was deactivated and backfilled in 1945, when it was discovered it was too small for the waste stream volume. Laboratory waste was diverted to the 216-Z-6 Crib. The site was interim stabilized in 1990. Potential constituents include Am-241, Cs-137, Co-60, Sr-90, tritium, PCB-1254, and selenium. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.		
216-Z-6	Crib	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$494,000	\$180,000	\$495,000		■	Existing information suggests this crib was only used for a short time and potentially only received minor radioactive and chemical waste. The RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.		
218-E-7	Burial Vault	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$489,000	\$318,000	\$4,741,000			■ Available information indicates that this site consists of three underground vaults that received miscellaneous waste including mixed fission product/transuranic wastes. The two original wooden vaults are 3.7 m (12 ft) deep and open at the bottom. The tops of the vaults are 1.5 m (5 ft) below grade. The third vault is a 2.4 m (8-ft) diameter concrete culvert pipe encasement, 7.7 m (25.2 ft) deep with a concrete cover and concrete floor. All three vaults were connected to the surface with waste disposal chutes. The disposal chutes have been removed and the site was surface stabilized in 1995. Because of the potential presence of long-lived radionuclides and hazardous chemicals, the RTD alternative is most protective of human receptors and best meets other CERCLA criteria.		

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Waste Site Code	Site Type	Overall Protection				Compliance with ARARs				Long-Term Effectiveness				Reduction in TMV				Short-term Effectiveness				Implementability				Present Worth				Alternative Analysis Outcome				
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative				
218-W-7	Burial Vault	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$489,000	\$318,000	\$541,000			■ Available information indicates that this waste site is a carbon steel burial vault that received dry, packaged laboratory and sampler wastes from the 222-S Building. The circular vault is approximately 3.8 m (12.5 ft) in diameter and 7.6 m (25 ft) deep, with its bottom resting on a 0.3 m (1-ft) thick concrete foundation. The vault has a dome and vent structure that extends to the surface. The ground surface is graveled. Because of the potential presence of radionuclides and hazardous chemicals, the RTD alternative is most protective of human receptors and best meets other CERCLA criteria.		
218-W-8	Burial Vault	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$489,000	\$318,000	\$800,000			■ Available information indicates that this site consists of three underground vaults that received laboratory process sample waste from the 222-T Building. The two original vaults are made of wooden planking and are 3.7 m (12 ft) deep. An excavation in 1996 determined the two wooden structures had previously been filled with dirt. The third replacement vault is a concrete culvert pipe approximately 1 m (3.2 ft) below grade and 8.5 m (28 ft) deep. Because of the potential presence of radionuclides and hazardous chemicals, the RTD alternative is most protective of human receptors and best meets other CERCLA criteria.		
218-W-9	Burial Ground	☒	②	☒	①	☒	②	☒	②	☒	②	☒	①	☒	☒	☒	☒	☒	②	②	③	☒	②	①	③	Note A	\$489,000	\$318,000	\$1,012,000			■ Available information indicates that the burial area is designated by four corner posts and chain. A burial trench is present of unknown depth and extent. Buried waste is reported to consist of sheet metal scrap, including the 211-S Tank taken from the REDOX Facility. The waste contains less than 0.1 curie total beta activity. The scrap metal is reported to be contaminated with ruthenium-106. The site may also include soil contamination from a pipeline leak that occurred in 1969. A dose rate of 450 mR/hr was measured in the area of the release. The site was surface stabilized with a layer of clean backfill in 1991. Because of the potential presence of radionuclides and hazardous chemicals, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.		

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		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative								
231-W-151	Receiving Vault	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$489,000	\$318,000	\$1,743,000				■	Available information indicates the 231-W-151 vault tanks were installed to receive drainage from about 75 floor drains in Building 231-Z. Waste was diverted to the 216-Z-5, 216-Z-6, 216-Z-7 cribs and the 216-Z-10 Reverse Well through this vault. The bottom of the vault is approximately 4.1 m (13.5 ft) below grade. The tanks were used for neutralizing 231-Z Building wastes prior to disposal to a crib. In 1974, a sample was taken that indicated tank 231-W-151-001 contained only 0.001 grams of plutonium. The tank contents were reported to be 5,413 liters (1430 gallons) of supernate and no sludge. Tank 231-W-151-002 is a 3,596 liter (950 gallon) stainless steel vessel. In 1974, a sample indicated 231-W-151-002, contained 228 grams of plutonium in the sludge and less than 0.001 grams of plutonium in the supernate. The tank contents were reported to be 3,615 liters (955 gallons) of supernate and 45 liters (12 gallons) of sludge. Alpha contamination at maximum levels of 210,000 disintegrations per minute (direct) was discovered on the concrete surface in 2002. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
2607-E1	Septic System	☑	☑	①	☑	☑	☑	①	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	①	☑	Note A	\$1,467,000	\$866,000	\$2,024,000			■	Available information indicates the septic system received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E12	Septic System	☑	☑	①	☑	☑	☑	①	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	①	☑	Note A	\$2,117,000	\$1,416,000	\$2,693,000			■	Available information indicates the septic system received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E3	Septic Tank	☑	☑	①	☑	☑	☑	①	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	①	☑	Note A	\$494,000	\$180,000	\$463,000			■	The septic tank was abandoned in 1997. The tank was pumped out and backfilled with soil. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E3	Septic Tank Drain Field	☑	☑	①	☑	☑	☑	①	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	①	☑	Note A	\$905,000	\$675,000	\$3,722,000			■	The associated septic tank was abandoned in 1997 in accordance with requirements of WAC 246-272A-0300. Available information indicates the drain field received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E4	Septic Tank	☑	☑	①	☑	☑	☑	①	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	①	☑	Note A	\$489,000	\$168,000	\$341,000			■	The septic tank was abandoned 1998 in accordance with WAC 246-272A-0300. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E4	Septic Tank Drain Field	☑	☑	①	☑	☑	☑	①	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	①	☑	Note A	\$445,000	\$122,000	\$415,000			■	The associated septic tank was abandoned in 1998 in accordance with requirements of WAC 246-272A-0300. Available information indicates the drain field received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.

Ranking of Alternatives for Individual CERCLA Criteria:

- ①②③ Circles indicate the criterion is met. The numbers designate the relative ranking in meeting the criterion among the alternatives.
- Indicates an alternative that was not evaluated because COPC concentrations are expected to be below RALs.
- ☑ Does not meet the criterion.
- Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome				
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative		
2607-E5	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$494,000	\$180,000	\$463,000		■	Available information indicates the septic tank received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E5	Septic Tank Drain Field	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$489,000	\$168,000	\$566,000		■	Available information indicates the drain field received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E6	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$494,000	\$180,000	\$457,000		■	The tank was abandoned in 1997 in accordance with WAC 246-272A-0300, including pumping the tank contents, filling the tank with soil, and removing the covers. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E6	Septic Tank Drain Field	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$880,000	\$444,000	\$2,570,000		■	The associated tank for this drain field was abandoned in 1997 in accordance with WAC 246-272A-0300. Available information indicates the drain field received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E7A	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$489,000	\$168,000	\$346,000		■	Available information indicates the septic tank received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E7B	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$489,000	\$168,000	\$346,000		■	Available information indicates the septic tank received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E9	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$445,000	\$122,000	\$311,000		■	Available information indicates the septic tank received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-E9	Septic Tank Drain Field	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$489,000	\$168,000	\$436,000		■	Available information indicates this drain field received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-EA	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$489,000	\$168,000	\$287,000		■	Available information indicates the septic tank received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
2607-EA	Septic Tank Drain Field	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$489,000	\$168,000	\$342,000		■	Available information indicates this drain field received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.

Ranking of Alternatives for Individual CERCLA Criteria:

- ①②③ Circles indicate the criterion is met. The numbers designate the relative ranking in meeting the criterion among the alternatives.
- Indicates an alternative that was not evaluated because COPC concentrations are expected to be below RALs.
- ☑ Does not meet the criterion.
- Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome								
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD							
Key Site Information and Rationale for Selected Alternative																																
2607-EE	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$489,000	\$168,000	\$346,000		■	Available information indicates the septic tank received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
2607-EE	Septic Tank Drain Field	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$445,000	\$122,000	\$415,000		■	Available information indicates this drain field received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
2607-W1	Septic System	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$6,006,000	\$1,347,000	\$5,975,000		■	Available information indicates the septic system received nonhazardous sanitary wastewater and sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
2607-W3	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$494,000	\$330,000	\$463,000		■	The 2607-W3 Septic Tank has been pumped, filled with sand, and abandoned in place in 1998. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
2607-W3	Septic Tank Drain Field	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$489,000	\$180,000	\$1,574,000		■	The associated tank for this drain field was abandoned in 1998 in accordance with WAC 246-272A-0300. Available information indicates the drain field received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
2607-W4	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$489,000	\$168,000	\$341,000		■	The septic tank was abandoned in June 1998, in accordance with WAC 246-272A-0300 requirements. Before filling with sand, the septic tank was pumped empty. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
2607-W4	Septic Tank Drain Field	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$445,000	\$122,000	\$297,000		■	The associated tank for this drain field was abandoned in 1998 in accordance with WAC 246-272A-0300. Available information indicates the drain field received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
2607-W6	Septic System	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	\$1,663,000	\$1,008,000	\$3,267,000		■	Available information indicates that this waste site consists of a currently active septic tank and associated drain field. The 2607-W6 Septic Tank is constructed of reinforced concrete and receives sanitary wastewater and sewage. The tank and associated drain field are designed to accept sanitary sewer effluent from the connected facilities. An upgrade or replacement of the existing larger on-site system will be required in 2025, because the existing system will be beyond its useful life. Some components of this system may be reused (septic tank, etc.). Because the septic tank and associated drain field received sanitary waste, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				

Ranking of Alternatives for Individual CERCLA Criteria:

- ①②③ Circles indicate the criterion is met. The numbers designate the relative ranking in meeting the criterion among the alternatives.
- Indicates an alternative that was not evaluated because COPC concentrations are expected to be below RALs.
- ☑ Does not meet the criterion.
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Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection				Compliance with ARARs				Long-Term Effectiveness				Reduction in TMV				Short-term Effectiveness				Implementability				Present Worth				Alternative Analysis Outcome				
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD					
Key Site Information and Rationale for Selected Alternative																																		
2607-W8	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	\$494,000	\$180,000	\$438,000		■	The tank was abandoned 1998 according to WAC 246-272A-0300 requirements. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		
2607-W8	Septic Tank Drain Field	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	\$938,000	\$301,000	\$1,120,000		■	This septic tank associate with this drain field was abandoned in 1998 in accordance with requirements of WAC 246-272A-0300. Available information indicates the drain field received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		
2607-W9	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	\$494,000	\$180,000	\$422,000		■	The tank was abandoned in 1999 in accordance with the requirements of WAC 246-272A-0300. When accessed, the tank was empty and dry. The tank was backfilled in place to eliminate void spaces. CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		
2607-W9	Septic Tank Drain Field	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	\$445,000	\$122,000	\$683,000		■	This septic tank associate with this drain field was abandoned in 1999 in accordance with requirements of WAC 246-272A-0300. Available information indicates the drain field received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		
2607-WC	Septic System	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	\$934,000	\$289,000	\$843,000		■	Available information indicates that the 2607-WC Septic System consists of two tanks and a trench-type drain field. This system was scheduled to be abandoned in 1998. In 1994, a soil investigation was performed to determine the soil type. Based on the soil type, there was not enough noncontaminated land in proximity for a new system. This system has been pumped twice a week in recent years. An upgrade or replacement of the existing on-site system is needed because the existing system is well beyond its useful life. Some components of the existing system may be reused (septic tank, etc.). This system may also pick up the sanitary wastewater flows from the 2607-W9 System in the future. Because the septic tank and associated drain field received sanitary waste, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		
2607-WL	Septic Tank	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	\$494,000	\$180,000	\$822,000		■	This septic tank was abandoned in 1999 in accordance with requirements of WAC 246-272A-0300. No sewage remains in the tank. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		
2607-WL	Septic Tank Drain Field	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	\$445,000	\$122,000	\$683,000		■	This septic tank associate with this drain field was abandoned in 1999 in accordance with requirements of WAC 246-272A-0300. Available information indicates the drain field received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		

Ranking of Alternatives for Individual CERCLA Criteria:

- ①②③ Circles indicate the criterion is met. The numbers designate the relative ranking in meeting the criterion among the alternatives.
- Indicates an alternative that was not evaluated because COPC concentrations are expected to be below RALs.
- ☑ Does not meet the criterion.
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Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome								
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative						
2607-WZ	Septic Tank	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	Note A	\$489,000	\$168,000	\$346,000		☐	■	Available information indicates the septic tank received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.			
2607-WZ	Septic Tank Drain Field	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	Note A	\$445,000	\$122,000	\$415,000	☐	■	Available information indicates the drain field received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
2607-Z	Septic Tank	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	Note A	\$494,000	\$180,000	\$570,000	☐	■	This septic tank was abandoned in 1999 in accordance with requirements of WAC 246-272A-0300. No sewage remains in the tank. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
2607-Z	Septic Tank Drain Field	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	Note A	\$704,000	\$347,000	\$2,078,000	☐	■	The associated septic tank was abandoned in 1999 in accordance with requirements of WAC 246-272A-0300. Available information indicates the drain field received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
2607-Z1	Septic Tank	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	Note A	\$489,000	\$168,000	\$322,000	☐	■	The septic tank was abandoned in accordance with the requirements of WAC 246-272A-0300 in 1999. All sewage inside the tank was removed and the empty tank was filled to eliminate void spaces. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
2607-Z1	Septic Tank Drain Field	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	☑	☐	❶	☐	Note A	\$489,000	\$168,000	\$406,000	☐	■	The associated septic tank was abandoned in 1999 in accordance with requirements of WAC 246-272A-0300. Available information indicates the drain field received nonhazardous sanitary sewage. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
270-E-1	Neutralization Tank	☑	☑	☑	❶	☑	☑	☑	②	☑	☑	☑	❶	☑	☑	☑	☑	☑	☑	☑	②	③	☑	☑	❶	③	Note A	Note B	\$180,000	\$482,000	■	The site consists of an underground acid neutralization tank. The tank was used to neutralize acidic process condensate from the 221-B and 224-B facilities. Remaining waste in the tank could include limestone, process condensate precipitates, salts, and residual process condensates. Process condensate was reported to have low levels of uranium, plutonium, and beta emitters. Radiation readings of tank sludge in 1974 showed less than 100 cpm. The tank has not been backfilled or surface stabilized. Contaminated anthills found in 1984 may be related to biological intrusion of the tank or the associated pipeline. Because of the potential presence of radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets CERCLA criteria.

Ranking of Alternatives for Individual CERCLA Criteria:

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Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection				Compliance with ARARs				Long-Term Effectiveness				Reduction in TMV				Short-term Effectiveness				Implementability				Present Worth				Alternative Analysis Outcome				
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative				
291-C-1	Burial Ground	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$442,000	\$109,000	\$730,000			■	Available information indicates that this site consists of a trench where the 291-C Stack was buried after demolition. Before demolition, 0.137 μCi/cm ² of cesium and 8.7 μCi/cm ² of strontium were measured from the interior of the stack. A previous survey found the stack base to have a dose rate of 8.5 rad/h. The trench was backfilled and surface stabilized with an ash layer. Because of the potential presence of radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.	
600 Original Central Landfill	Sanitary Landfill	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$494,000	\$318,000	\$2,383,000			■	This site is a backfilled trench that is posted “Underground Radioactive Material.” The trench received miscellaneous trash and debris including office wastes, some glass, electrical wastes, and minimal metal wastes. The trench was used for approximately 9 months. On June 5, 1988, a test pit was dug to try to locate this burial trench and a special radiological survey found 1,500 cpm beta/gamma. After encountering radioactive contamination, the excavation was discontinued. This discovery resulted in the trench being posted as “Underground Radioactive Material.” The RTD alternative is protective of human and ecological receptors and best meets CERCLA criteria for this site.	
600-218	Dumping Area	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$202,000	\$689,000		■	Available information indicates that this is a dumping area containing demolition debris, including wood, concrete footings, pipe, sheet metal, barbed wire, empty oil and paint cans, and steel fence posts. Because contamination is not anticipated, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		
600-220	Dumping Area	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$638,000	\$1,127,000		■	Available information indicates that this site consists of dumping areas containing metal, transite, fluorescent light bulbs, metal ducting, fiberglass insulation, an unknown white granular substance, pipe, and wire. Empty oil, paint, and bleach containers are also present. One area appears to have been scraped with a bulldozer. Several waste materials are partially buried. The permanent structures included barracks, latrines, mess halls, craft shops, pump houses, motor pools, and radar facilities. Because contamination is not anticipated, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		
600-222	Military Compound	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$533,000	\$1,127,000		■	Available information indicates that this is a former military gun site. Material left at the site includes trees, walkways, roads, an underground telephone warning sign, ceramic pipe, oil filters, coat hangers, and a few pieces of transite siding. Because no contamination is anticipated, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		

Ranking of Alternatives for Individual CERCLA Criteria:

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Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome									
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative							
600-226	Dumping Area	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③		Note A	Note B	\$122,000	\$131,000			■
600-228	Dumping Area	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$122,000	\$295,000		■	Available information indicates that this is a gun site dumping area. Surface debris consists of sheetrock, metal, transite, glass, and empty paint cans. Two small pits are also present. One contains steel fence posts and barbed wire, the other contains metal, transite, and glass. Based on the nature of the debris, contamination is not anticipated and CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
600-262	Crib	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$180,000	\$393,000		■	Available information indicates that this site consists of a test crib and 21 monitoring wells installed as a field experiment to predict crib capacity and waste retention. The site waste injected with 34,000 L (9,000 gal) of calcium nitrate solution spiked with Sr-85 (half-life = 65 days). The bottom of the crib was 0.6 m (2 ft) bgs and the water table at the time of the test was about 3.7 m (12 ft) bgs. Another test may have been carried out later using the same solutions. Because the radionuclide has a very short half-life and the calcium nitrate solution is very soluble, no contaminant is likely to remain. The wells were removed and decommissioned in 2007. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
600-275	Foundation-Removed	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$290,000	\$589,000			■	Available information indicates that this site consists of the foundations for seven regulated storage areas for ammunition storage and Nike missile parts. Plutonium scrap in barrels of carbon tetrachloride was also stored at the site and one barrel was reported to have leaked and contaminated one of the concrete foundations. The contamination is reported to have been cleaned up. Because of the potential presence of hazardous substances, the RTD alternative is most protective of human and ecological receptors and meets other CERCLA criteria.
600-281	Dumping Area	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$168,000	\$442,000		■	Available information indicates that this was a dumping area. Current debris includes some material suspected to be asbestos, charred wood, glass, metal pipes, gauges, metal containers, concrete, and transite. Based on the nature of the expected debris at this site, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
600-36	Burn Pit	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$202,000	\$466,000		■	Available information indicates that this site consists of a burn pit adjacent to a railroad siding. In addition to a burned and oil stained area, the site contains metal canisters of nuts and bolts, batteries, abandoned rails, and metal debris. Based on the nature of the expected waste at this site, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	

Ranking of Alternatives for Individual CERCLA Criteria:

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Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection				Compliance with ARARs				Long-Term Effectiveness				Reduction in TMV				Short-term Effectiveness				Implementability				Present Worth				Alternative Analysis Outcome					
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative					
600-37	French Drain/Tanks	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	Note B	\$180,000	\$595,000			■	Available information indicates that this site consists of four steel tanks and four French drains. The tanks are above ground, although some of the wooden supports have burned in range fires. Three of the French drains are about 4.9 m (16 ft) deep and the fourth (larger) drain is of unreported depth. The tanks and drains may have a military origin and may be related to an infiltration test. It is assumed that raw water was disposed to the drains. Based on the assumed nature of the expected waste at this site, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.						
600-38	Dumping Area	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	①	○	Note A	Note B	\$446,000	\$886,000			■	Available information indicates that this was a dumping area at a railroad siding. The dump site originally contained material that appeared to be related to cleaning or decontamination, including rubber boots, brooms, brushes, chisels mounted on poles, hoses, and various trash, including four or five drums. One of the drums had leaked an oily liquid. Much of the material was cleaned up by 1996. The site is reported to consist of nonradioactive and nondangerous waste. Based on the nature of the waste noted at this site, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.						
600-40	Dumping Area	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$122,000	\$168,000			■	Available information indicates that this site consists of a dumping area containing concrete, lumber, miscellaneous metal debris, rusted cans, asphalt-based roofing, wooden posts, two small wooden structures, and a wheelbarrow. The site may not be contaminated based on the nonhazardous nature of the material, but RTD is the preferred alternative because it is cost-effective and protective.			
600-51	Dumping Area	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$122,000	\$131,000			■	Available information indicates that this site consists of a dumping area where a white powdered sodium compound was observed. A later site visit showed the compound to be gone, with no visible soil discoloration. Because of the potentially hazardous nature of the waste, the RTD alternative is most protective of human and ecological receptors and meets CERCLA criteria.			
600-65	Dumping Area	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$122,000	\$132,000			■	Available information indicates that this site was a dumping area containing two crushed and flattened 208 L (55-gal) drums, an oil filter housing, a cable, a large concrete block, and some indication of oil disposal. In 2001, the debris could not be located. RTD is the preferred alternative, because it is cost-effective and most protective of potential exposure to human and ecological receptors.			
600-66	Dumping Area	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$122,000	\$131,000			■	Available information indicates that this site consists of a dumping area containing two crushed and flattened drums and some metal sheeting. Because of the potentially hazardous nature of the waste, the RTD alternative is most protective of human and ecological receptors and meets other CERCLA criteria.			

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Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome								
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative		
600-70	Dumping Area	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	Note A	Note B	\$347,000	\$1,800,000			■	Available information indicates that this site is a dumping area that received waste related to construction of the REDOX plant. Waste includes acid metal pickling waste, welding cooling water, sandblasting waste, gasoline, oil, other lubricants, and anti-freeze. Large amounts of concrete, wood, metal, cans, barrels, and transite are also present. Based on the expected nature of the debris at this site, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.			
600-71	Burn Pit	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	Note A	Note B	\$122,000	\$417,000			■	Available information indicates that this site consists of a burn pit where charred material, wood, corrugated metal, oil cans, aerosol cans, paint cans, glass jars, paper, rope, rubber, roofing, metal pipe, and metal have been observed in the past. Based on the expected nature of the debris at this site, the CS/NFA alternative meets CERCLA criteria, is cost-effective, and would lead to close out of the site.			
Chemical Tile Field North 2703-E	Drain Field	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	Note A	Note B	\$330,000	\$914,000			■	Available information indicates that this site consists of a drain field (trench and seepage basin) that received nonhazardous waste from the 272-E and 2703-E Buildings. It is unknown whether a surface stabilization layer is present. Based on the expected nonhazardous nature of the waste, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.			
Old Central Shop Area	Foundations	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	Note A	Note B	\$721,000	\$6,558,000			■	Available information indicates that this site consists of foundations for the Old Central Shop Area. Debris found at the site consists of lumber, bricks, shingles, buckets, bricks, a barrel, office furniture, wooden tables, and nails. Several foundations and burnt areas are visible. A gas station at this facility stored diesel, gasoline, and kerosene in 11,000 L (3,000-gal) tanks and a fuel storage facility stored 659,000 L (174,000 gal) of gasoline and diesel in tanks. In addition, a 379,000 L (100,000-gal) storage tank (probably water storage tank) was connected to a boiler for heating. A sanitary sewer system (open trench and settling ponds) was also present. Based on the expected nonhazardous nature of the materials noted at this site, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.			
UPR-200-E-10; -11; -12; -20; -33	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$2,202,000	\$610,000	\$4,972,000			■ Available information indicates that these waste sites are the result of contamination that spread along the railroad tracks and right-of-way while transporting radioactive equipment or liquid waste. The contamination occurred on the railroad bed and right-of-way between PUREX and the 218-E-10 Burial Ground. In some cases, following a release, decontamination of the area was undertaken. Sections of the track have had a soil stabilization cover added and are posted as an underground radioactive area. Because long-lived radionuclides may be present, the RTD alternative is protective of human and ecological receptors and best meets CERCLA criteria.

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		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative								
UPR-200-E-101	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$421,000	\$86,000	\$241,000				■ Available information indicates that this site is the result of surface contamination spread between the B Tank Farm fence and the 242-B Evaporator building. Windblown particulates from the tank farm or spills from the 242-B Evaporator may have been the cause of the contamination, but an exact cause for this area of contamination has not been determined. In the past, contaminated area postings periodically extended beyond the chain link fence of the tank farm, but the postings were removed as the contamination was removed. The site has a soil stabilization cover and is currently posted as an underground radioactive area. The RTD alternative is protective of human and ecological receptors and best meets CERCLA criteria for this site.		
UPR-200-E-112	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$439,000	\$2,444,000				■ Available information indicates that this site consists of an unplanned release along the railroad track from B Plant to the burial ground. Liquid spilled out of a cesium ion-exchange column and was spread by the train wheels. Radiological survey readings are reported to have ranged from 40,000 to 80,000 cpm. The original spill location was decontaminated immediately, but the completeness of the cleanup action is uncertain. Because of the potential presence of radionuclide contamination along this rail line, RTD alternative is the preferred alternative and best meets the CERCLA criteria.	
UPR-200-E-143	Unplanned Release	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$310,000	\$724,000			■	Available information indicates that this site consists of an unplanned release related to the 244-A Lift Station, the 200-E Powerhouse, and UPR-200-E-100. The site was contaminated with radioactive animal feces/urine and windblown particulates. A radiological survey in 1990 resulted in dose of up to 900 mrem/h from the animal feces. A large portion of this site was scraped in 1994 to remove contaminated soil. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
UPR-200-E-2	Unplanned Release	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	○	○	☑	○	①	○	Note A	Note B	\$207,000	\$550,000			■	Available information indicates that this site consists of an unplanned release of radioactive contamination in a 305 m (1,000 ft) radius around the B and T Plant stacks. Most stack-related contamination was ruthenium (half-life = 373 days) and contamination has decayed to below detection. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
UPR-200-E-28	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$122,000	\$133,000			■	Available information indicates that this site consists of an unplanned release in the eastern half of the PUREX exclusion area when fission products escaped from a trap pit. Because of the potential presence of radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets CERCLA criteria.
UPR-200-E-35	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$489,000	\$168,000	\$441,000			■	Available information indicates that this site consists of an unplanned release related to repair of a radiologically contaminated underground pipe. The site is reported to contain less than 1 Ci of fission products and is not reflected in surface radiological surveys. The RTD alternative is most protective of potential human and ecological receptors.

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		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative				
UPR-200-E-37	Unplanned Release	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	①	○	Note A	Note B	\$452,000	\$1,830,000		■	There is currently no physical evidence of this site and it is no longer marked or posted. On July 31, 1967, a release from the Strontium Semi-Works Facility was documented on a Radiation Occurrence Report. A documented remediation of a contaminated area east of Semi-Works was done 22 years later in 1989. Contaminated soil in the field east and south of Semi-Works was scraped up and disposed of in the 216-C-9 Dry Waste Burial Trench. A subsequent radiological survey was carried out and 96 soil samples were analyzed. Concentrations of radionuclides in all the samples were below the values listed in Table K-2 of the Westinghouse Environmental Compliance Manual WHC-CM-7-5. Based on the survey and sample results, radiological postings were removed from the area. Based on reported prior cleanup actions and sampling results, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.						
UPR-200-E-39	Unplanned Release	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$489,000	\$168,000	\$137,000		■	Available information indicates that this site consists of an unplanned release on the ground and blacktop outside the 216-A-36B Crib Sampler Shack. The area was hosed down and is currently included in a large area of surface stabilization (200-E-103). Radiological contamination levels ranged up to 450 mrem/h shortly after the release. Because of the potential presence of residual radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.		
UPR-200-E-43	Unplanned Release	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	○	○	☒	○	①	○	Note A	Note B	\$109,000	\$143,000		■	Available information indicates that this site consists of an unplanned release related to transportation of the 102-BY Pump between the BY Tank Farm and the burial ground. Radiological readings along the road ranged up to 100,000 cpm. Decontamination of the road was carried out but there is no record of the effectiveness of these activities. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		
UPR-200-E-50	Unplanned Release	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	○	○	☒	○	①	○	Note A	Note B	\$207,000	\$569,000		■	Available information indicates that this site consists of an unplanned release in an area located southeast of the Over ground Radioactive Equipment Storage Yard and north of the C Tank Farm. Radiological particulate contaminants are presumed to have come from the equipment storage yard where some highly contaminated equipment was stored. Beta gamma readings up to 100,000 cpm have been found on the surface in the past, decreasing away from the source area. Some decontamination was carried out in 1974, but there is no record of the completeness of these efforts. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.		

Ranking of Alternatives for Individual CERCLA Criteria:

- ①②③ Circles indicate the criterion is met. The numbers designate the relative ranking in meeting the criterion among the alternatives.
- Indicates an alternative that was not evaluated because COPC concentrations are expected to be below RALs.
- ☑ Does not meet the criterion.
- Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome									
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative							
UPR-200-E-52	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$122,000	\$148,000			■	Available information indicates that this site consists of an unplanned release of radioactive liquid related to the drain area of the steam pressure relief pipe discharge from the E-5-2 Strontium Concentrator. Beta/gamma radiological readings up to 20,000 cpm were found in the soil near the drain. Radionuclides in the soil continue to be released by precipitation. Because of the potential presence of residual radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
UPR-200-E-54	Unplanned Release	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	☐	☐	☑	☐	☐	☐	☑	☐	①	☐	Note A	Note B	\$122,000	\$297,000		■	Available information indicates that this site is the result of an unplanned release associated with water that was being used to decontaminate a manipulator and seeped under an exit door at the 225-B Building, spreading low-level radiological contamination onto a concrete door pad and adjacent soil. A radiological survey showed 25 mR/h direct and 20,000 cpm smearable contamination. The door pad was decontaminated from 25 mR/h to 4,000 cpm, the remaining contamination was covered in plastic, contaminated soil was packaged for disposal, and the concrete pad was removed and replaced. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
UPR-200-E-55	Unplanned Release	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	☐	☐	☑	☐	☐	☐	☑	☐	①	☐	Note A	Note B	\$86,000	\$134,000		■	Available information indicates that this site is the result of windblown radioactive particulates being released from a plastic sheet in a zone near the 212-B Building. An initial radiological survey showed 5,000 to 30,000 cpm. The area was cleaned up and postings removed in 1979. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
UPR-200-E-62	Unplanned Release	☑	☐	①	☐	☑	☐	①	☐	☑	☐	①	☐	☑	☐	☐	☐	☑	☐	☐	☐	☑	☐	①	☐	Note A	Note B	\$86,000	\$105,000		■	Available information indicates that this site consists of an unplanned release of radioactive liquid that had spilled from a pressure test assembly while in transit. A radiological survey of the contaminated area in 1982 showed 350 mrad/h. Ground contamination was removed and taken to a burial ground. The site was cleaned to background levels and released from Radiological Control in 1982. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
UPR-200-E-64	Unplanned Release	☑	②	☑	①	☑	②	☑	②	☑	②	☑	①	☑	☑	☑	☑	☑	☑	②	②	③	☑	②	①	③	Note A	\$728,000	\$347,000	\$851,000		■	Available information indicates that this site consists of an unplanned release related to biological transport (ants, animals, etc.) of radiological contamination from the 216-B-64 “Swab Riser” or the vent riser from the 270-E-1 Neutralization Tank. A radiological survey in 1987 showed 60,000 cpm on the soil of an ant hill and a survey in 1985 showed 30 mrad/h on a pipe at the site. Because of the potential presence of radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.

Ranking of Alternatives for Individual CERCLA Criteria:

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- Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome													
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative											
UPR-200-E-66	Unplanned Release	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	①	○	Note A	\$695,000	\$241,000	\$760,000		■	Available information indicates that this site consists of an unplanned release around the perimeter of the 216-A-42 Retention Basin. Radiologically contaminated liquid was allowed to evaporate and particulates were spread by the wind. A radiological survey in 1984 showed levels up to 100,000 cpm. The contaminated area within the basin was subsequently backfilled with clean soil. A radiation survey of the 216-A-42 Basin perimeter fence done on December 8, 1998, did not identify any contamination. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.									
UPR-200-E-69	Rail Siding	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$445,000	\$202,000	\$755,000		■	Available information indicates that this site consists of an unplanned release along the railroad track extending from the B-221 railroad tunnel door to Atlanta Avenue. Radiological contamination occurred when flush water from a burial box leaked during rail transport. The section of track was subsequently covered with gravel. Because of the potential presence radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.					
UPR-200-E-89	Unplanned Release	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	①	○	Note A	\$445,000	\$202,000	\$566,000		■	Available information indicates that this site resulted from an unplanned release of radioactive particulates spread by wind at the BX and BY Tank Farms. Surface stabilization was carried out in 1991, when contaminated soil was scraped up and a clean cover was applied. Subsequent soil samples were all below release limits. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.									
UPR-200-E-95	Rail Siding	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$445,000	\$122,000	\$821,000		■	Available information indicates that this site consists of an unplanned release related to the storage of radiologically contaminated rail cars on a railroad spur. A radiological survey in 1991 showed up to 350,000 dpm beta. The tracks were covered with gravel in 1998. Because of the potential presence of radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.					
UPR-200-E-98	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$421,000	\$86,000	\$106,000		■	Available information indicates that this site is located within a large surface stabilized area (200-E-41). Much of the contamination was removed and placed into the 218-C-9 Burial Pit in 1992. The area has been surface stabilized with powerhouse ash. The covered area has “Underground Radioactive Material” warning signs posted. The RTD alternative is protective of human and ecological receptors and best meets CERCLA criteria for this site.					
UPR-200-W-101	Unplanned Release	☑	○	①	○	☑	○	①	○	☑	○	①	○	☑	○	○	○	☑	○	①	○	Note A	\$489,000	\$168,000	\$576,000		■	Available information indicates that this site consists of a radioactive spill of unreclaimed acid on the ground at the northeast end of the 221-U Building. About 1 Ci of Sr-90 was released. The area was covered with 7.6 cm (3 in.) of gravel and an asphalt cap. Alternative CS/NFA is the most appropriate alternative and meets other CERCLA criteria that document that decay has resulted in radiological levels below PRCLs.									

Ranking of Alternatives for Individual CERCLA Criteria:

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- ☑ Does not meet the criterion.
- Indicates the preferred alternative for the waste site.

Table 5-4. Assessment of Alternatives Using CERCLA Evaluation Criteria and Selection of the Preferred Removal Action Alternative for Each Waste Site. (36 Pages)

Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome									
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative							
UPR-200-W-116	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$681,000	\$241,000	\$736,000				■ The area designated as UPR-200-W-116 was contaminated in 1980 with particulates spread by wind from the 204-S Waste Storage Tank exhaust and the related Railroad Tanker Waste Unloading Station. Radioactive particulates traveled eastward and affected an area approximately 0.8 ha (2 a) in size. It is possible that UPR-200-W-69 (a 1973 contamination spread from a contaminated drain pit) also contributed to the contamination at this location. In 1974, the area was bladed into windrows and in 1993 it was interim stabilized and contaminated soil was consolidated next to the REDOX railroad cut soil berm. This site is posted with URM signs. Based on the nature of the release and prior actions taken, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.
UPR-200-W-165	Unplanned Release	☑	⊖	①	⊖	☑	⊖	①	⊖	☑	⊖	①	⊖	☑	⊖	⊖	⊖	☑	⊖	①	⊖	☑	⊖	①	⊖	Note A	Note B	\$241,000	\$655,000			■ Available information indicates that this site consists of an unplanned release from the S, SX, and SY Tank Farms, presumably windblown particulates. A radiological survey showed readings up to 200 cpm and 45 mrad/h. The area was scraped, contaminated soil removed, and a clean backfill cover was installed in 1992. The area was subsequently removed from radiological control. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.	
UPR-200-W-23	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$421,000	\$86,000	\$108,000				■ Available information indicates that this site consists of an unplanned release related to a fire in a waste box that spread plutonium contamination over a 28 m² (300 ft²) area. A radiological survey showed readings up to 10,000 dpm. The site was covered in blacktop and surrounded by “Do Not Excavate” signs. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
UPR-200-W-3, -4, -65, -73	Rail Siding	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	Note B	\$450,000	\$2,273,000				■ Available information indicates that these sites consist of unplanned releases related to the transport of radioactive materials using rail cars. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets CERCLA criteria.
UPR-200-W-39	Unplanned Release	☑	☑	☑	①	☑	☑	☑	②	☑	☑	☑	①	☑	☑	☑	☑	☑	☑	②	③	☑	☑	①	③	Note A	\$489,000	\$168,000	\$415,000				■ Available information indicates that a radioactive leak occurred in March 1954 and spread to an area southeast of the 224-U Building. The contamination was placed in a trench and the contamination was covered with clean soil. The site is not marked because the 224-UA Building was built over the trench location. The exposure potential is low until the 224-UA Building is removed. Assuming removal of the building, the RTD alternative is protective of human and ecological receptors and best meets CERCLA criteria for this site.

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Waste Site Code	Site Type	Overall Protection			Compliance with ARARs			Long-Term Effectiveness			Reduction in TMV			Short-term Effectiveness			Implementability			Present Worth				Alternative Analysis Outcome								
		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD				Key Site Information and Rationale for Selected Alternative			
UPR-200-W-43	Unplanned Release	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	①	○	Note A	Note B	\$86,000	\$121,000		■		Available information indicates that this site consists of an unplanned release related to windblown alpha contamination east of the 233-S Building. No clean-up activity is noted and it is presumed that subsequent wind storms blew the radiological particulates away. The area is within the former footprint of the 233-S Facility (demolished in 2003/2004). The area may have been remediated with the facility. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.			
UPR-200-W-51	Unplanned Release	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	①	○	Note A	Note B	\$241,000	\$655,000		■		Available information indicates that this site consists of an unplanned release related to a radioactive steam leak at the 241-S-151 Diversion Box. While trying to unplug a line to the diversion box, high-pressure steam bled back into the diversion box causing the contamination. The surrounding areas were flushed with water and the surface scraped. CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.			
UPR-200-W-56	Unplanned Release	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	Note B	\$168,000	\$161,000		■	Available information indicates that this site consists of an unplanned release associated with heavy rains that washed radiological contamination from a papered area in an outside radiation zone into a ground recess adjacent to the REDOX Column Carrier Trench. A grossly contaminated steel cable was being decontaminated in 1961 and was the source of the contaminants. A radiological survey showed 30,000 cpm over 19 m ² (200 ft ²) area (gravel) and 80,000 cpm over 4.6 m ² (50 ft ²) area (blacktop under paper). No clean-up actions are mentioned. The RTD alternative is cost-effective, protective of human and ecological receptors, and best meets other CERCLA criteria.
UPR-200-W-57	Unplanned Release	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	①	○	Note A	Note B	\$122,000	\$131,000		■		Available information indicates that this site is the result of a radioactive unplanned release caused by a fire in the 233-S Building. Plutonium contamination was spread throughout the building and to a small degree outside the building via soot and ash in the air. The 233-S Building was subsequently demolished and removed. Because the contamination most likely was removed when the 233-S Building was demolished, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.			
UPR-200-W-61	Unplanned Release	☒	○	①	○	☒	○	①	○	☒	○	①	○	☒	○	○	○	☒	○	①	○	Note A	Note B	\$180,000	\$572,000		■		Available information indicates that this site consists of a radioactive unplanned release related to a fire hose rupturing while flushing the H-10 to 241-SX Transfer Line. Backflow from the transfer line contaminated an outside ground area. A radiological survey showed 4,000 to 100,000 cpm over a 19 m ² (200 ft ²) area. The site was released from radiation control after 15 cm (6 in.) of soil was removed and the walkways were flushed with clean water. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.			

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UPR-200-W-63	Unplanned Release	☒	☐	①	☐	☒	☐	①	☐	☒	☐	①	☐	☒	☐	①	☐	☒	☐	①	☐	Note A	\$421,000	\$86,000	\$407,000		☐	Available information indicates that this site is the result of a radioactive unplanned release of Sr-90 in the form of particulate matter that spread from a diversion box jumper as it was being transported from the 241-TX-53 Diversion Box to the 221-T Canyon. The resulting contamination on the roadway was removed. The contamination on the shoulder and inside a borrow pit was covered with clean soil. The site was removed from radiation control in 1972. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.					
UPR-200-W-67	Unplanned Release	☒	☐	①	☐	☒	☐	①	☐	☒	☐	①	☐	☒	☐	①	☐	☒	☐	①	☐	Note A	Note B	\$86,000	\$114,000		☐	Available information indicates that this site consists of an unplanned release related to a contaminated electric lift parked on the ground outside of a radiation zone. The lift was from the B Plant and had been moved to the 2706-T Building without being surveyed first. Radiological survey readings in 1970 showed ground contamination was 20,000 cpm beta/gamma and the lift was contaminated at 500 mrad/h. A site visit in 1991 noted there were no radiation hazard postings in the area. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.					
UPR-200-W-70	Unplanned Release	☒	☒	☒	①	☒	☒	☒	②	☒	☒	☒	①	☒	☒	☒	☒	☒	☒	☒	②	③	☒	☒	①	③	Note A	\$445,000	\$122,000	\$137,000		☐	Available information indicates that this site consists of an unplanned release related to an unauthorized dumping of a contaminated material into a noncontaminated trench used for burning. The site is associated with the 200-W Burn Pit and is within the 200-W Ash Disposal Basin. Radiological hot spots were discovered within the burning trench, which showed 20,000 cpm to 30 mrad/h in some areas. A 3.8 L (1-gal) bucket showed 100,000 cpm (250 mrad/h) plus alpha from 5,000 to 200,000 dpm. In 1973, fabro-film was sprayed on contaminated areas, and a locked gate was installed. Samples suggest radionuclides to be americium and plutonium. Because of the potential presence of long-lived radionuclides, the RTD alternative is most protective of human and ecological receptors and best meets other CERCLA criteria.
UPR-200-W-71	Unplanned Release	☒	☐	①	☐	☒	☐	①	☐	☒	☐	①	☐	☒	☐	①	☐	☒	☐	①	☐	Note A	Note B	\$347,000	\$944,000		☐	Available information indicates that contamination was spread onto the road in January 1974 along the route from the U Tank Farm to the 200 West Area Burial Ground, affecting 16th Street and Dayton Avenue. At the exit of the U Farm, on 16th Street, spots to 600 mrad/h were found. Numerous contaminated spots from 20,000 to 100,000 cpm were found along 16th Street to the intersection of 16th Street and Dayton Avenue, and on Dayton Avenue. The cause of the contamination spread included inadequate packaging of the failed equipment, inadequate surveillance of the load during transit, and transporting the equipment while it was raining. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.					

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		No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	No Action	MESC/IC/MNA	CS/NFA	RTD	Key Site Information and Rationale for Selected Alternative					
UPR-200-W-96	Unplanned Release	☒	☐	❶	☐	☒	☐	❶	☐	☒	☐	❶	☐	☒	☐	❶	☐	☒	☐	❶	☐	Note A				\$442,000	\$109,000	\$382,000		■	Available information indicates this waste site is the result of a release that contaminated the floor of the 233-SA Filter Exhaust Building, the concrete pad outside the north door of the filter exhaust building, the electric motor pad, and the ground surface on the north side of the 233-SA Filter Exhaust Building. The 233-S Facility was demolished in 2003 and 2004. Alternative CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
UPR-600-12	Unplanned Release	☒	☐	❶	☐	☒	☐	❶	☐	☒	☐	❶	☐	☒	☐	❶	☐	☒	☐	❶	☐	Note A				Note B	\$168,000	\$181,000		■	Available information indicates that this site consists of an unplanned release of radioactive contaminants related to a truck rollover on the shoulder of Route 4S in the 200 East Area. In 1954, a tractor-trailer rolled over and spilled 6,000 L (1,600 gal) of UNH onto the ground and roadway. The roadway was washed and a thin layer of new asphalt was applied over contamination. The shoulder was covered in clean soil reducing contamination levels from 60 mrad/h to 20,000 cpm. In 1971, contamination was dug up and removed to a 200 West Area Burial Ground. In 1998, contamination on south shoulder of Route 4S near the top of hill was discovered and in 1999, backfilled with clean material. In January 2006, contaminated (beta/gamma) soil was removed and gravel added to site. Because the contamination has most likely been removed, CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				
UPR-600-21	Unplanned Release	☒	☐	❶	☐	☒	☐	❶	☐	☒	☐	❶	☐	☒	☐	❶	☐	☒	☐	❶	☐	Note A				Note B	\$86,000	\$101,000		■	Available information indicates that this site is related to an unplanned release of radioactive tumbleweeds and possible windblown particulates from the PUREX stack or nearby burial ground. No survey results are reported for the area. The majority of the tumbleweed contamination has been removed over the years and the area is no longer posted. CS/NFA is the most appropriate alternative and meets the other CERCLA criteria.				

Note A: The NA alternative was retained for detailed analysis as a baseline description of the effects of taking no action as required by CERCLA regulations. This alternative cannot be considered for the 200-MG-1 OU waste sites because of the absence of characterization data. Hence, there is no cost listed for this alternative.

Note B: No cost in the MESC/IC/MNA category indicates a site with no stabilization cover and no backfill according to the Waste Information Data System database. Sites that do not have a stabilization cover but have been backfilled may still be considered for MESC/IC/MNA.

Am-241	=	americium-241.	cpm	=	counts per minute.	mrem	=	millirem.	Ru-106	=	ruthenium-106.
ARAR	=	applicable or relevant and appropriate requirement.	Cs-137	=	cesium-137.	NA	=	no action.	Sr-90	=	strontium-90.
bgs	=	below ground surface.	CS/NFA	=	confirmatory sampling/no further action.	PCB	=	polychlorinated biphenyl.	Tc-99	=	technetium-99.
CA	=	Contaminated Area.	dpm	=	disintegrations per minute.	PPE	=	personal protective equipment.	TMV	=	toxicity, mobility, and volume.
Ce-144	=	cerium-144.	LERF	=	Liquid Effluent Retention Facility.	PRCL	=	preliminary removal cleanup level.	U-238	=	uranium-238.
CERCLA	=	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980.</i>	MESC/IC/MNA	=	maintain existing soil cover/institutional controls/monitored natural attenuation.	PUREX	=	Plutonium-Uranium Extraction Plant.	UNH	=	uranyl nitrate hexahydrate.
Co-60	=	cobalt-60.	mR	=	milliroentgen.	RAL	=	removal action levels.	URM	=	underground radioactive material.
COPC	=	contaminant of potential concern.	mrads	=	millirad.	REDOX	=	Reduction-Oxidation Plant.	WAC	=	<i>Washington Administrative Code.</i>
						RTD	=	removal, treatment, and disposal.			

Ranking of Alternatives for Individual CERCLA Criteria:

- ① ② ③ Circles indicate the criterion is met. The numbers designate the relative ranking in meeting the criterion among the alternatives.
 ○ Indicates an alternative that was not evaluated because COPC concentrations are expected to be below RALs.
 ☒ Does not meet the criterion.
 ■ Indicates the preferred alternative for the waste site.

6.0 CONCLUSIONS AND RECOMMENDED ALTERNATIVES

This chapter provides a summary of the preferred removal actions and the path forward for implementing the removal actions for the 200-MG-1 OU waste sites.

The anticipated final remedy for several 200-MG-1 OU waste sites is capping under a barrier that will remediate a larger nearby facility. Such sites will be maintained in a safe condition until the barrier is built. However, if these waste sites are determined to be a near term threat, RTD may be implemented as directed by the on scene coordinator. It is not anticipated that any of these waste sites is a threat to groundwater. The Tri-Parties are developing a Central Plateau remediation strategy, and this removal action will be consistent with the final remedy.

6.1 SUMMARY OF PREFERRED REMOVAL ACTIONS

Table 6-1 summarizes the present worth costs of the preferred removal alternatives across all waste sites. The 200-MG-1 OU preferred removal actions have a present worth cost of \$119,497,000. The type, size, and extent of hazardous substance contamination vary considerably across the 200-MG-1 OU waste sites.

Table 6-1. Summary of the 200-MG-1 Operable Unit Waste Site Preferred Removal Actions.

Preferred Alternative	Number of Waste Sites	Present Worth
NA	0	\$0
MESC/IC/MNA	0	\$0
CS/NFA	91	\$29,695,000
RTD	103	\$89,802,000
Total	194	\$119,497,000

CS/NFA = confirmatory sampling/no further action.

MESC/IC/MNA = maintain existing soil cover/institutional controls/monitored natural attenuation.

NA = no action.

RTD = removal, treatment, and disposal.

Tables 6-2 and 6-3 summarize the preferred removal action for each site for CS/NFA and RTD, respectively. As discussed earlier, the NA and MESC/IC/MNA alternatives were not selected as the preferred alternatives for any of the 200-MG-1 OU waste sites.

Table 6-2. Waste Sites with Confirmatory Sampling/No Further Action Preferred Removal Action Alternative. (2 Pages)

Waste Site Code	Waste Site Type	Present Worth	Waste Site Code	Waste Site Type	Present Worth
200 CP	Depression/Pit (nonspecific)	\$347,000	2607-W3	Septic System	\$510,000
200-E-2	Unplanned Release	\$168,000	2607-W4	Septic System	\$290,000
200-E-6	Septic System	\$180,000	2607-W6	Septic System	\$1,008,000
200-E-7	Septic System	\$290,000	2607-W8	Septic System	\$302,000
200-E-13	Dumping Area	\$347,000	2607-W9	Septic System	\$302,000
200-E-26	Unplanned Release	\$180,000	2607-WC	Septic System	\$290,000
200-E-46	Dumping Area	\$347,000	2607-WL	Septic System	\$302,000
200-E-101	Experiment/Test Site	\$180,000	2607-WZ	Septic System	\$290,000
200-E-110	Dumping Area	\$87,000	2607-Z	Septic System	\$527,000
200-E-121	Unplanned Release	\$242,000	2607-Z1	Septic System	\$336,000
200-W Ash Disposal Basin	Coal Ash Pit	\$347,000	600-36	Burn Pit	\$202,000
200-W BP	Burn Pit	\$347,000	600-37	French Drain	\$180,000
200-W-2	Spoils Pile/Berm	\$180,000	600-38	Dumping Area	\$447,000
200-W-11	Dumping Area	\$202,000	600-70	Dumping Area	\$347,000
200-W-14	Dumping Area	\$168,000	600-71	Burn Pit	\$122,000
200-W-33	Dumping Area	\$598,000	600-218	Dumping Area	\$202,000
200-W-51	Septic System	\$290,000	600-220	Dumping Area	\$638,000
200-W-53	Unplanned Release	\$310,000	600-222	Military Compound	\$533,000
200-W-55	Dumping Area	\$122,000	600-228	Dumping Area	\$122,000
200-W-101	Dumping Area	\$87,000	600-262	Crib	\$180,000
216-A-1	Crib	\$180,000	600-281	Dumping Area	\$168,000
216-A-3	Crib	\$180,000	Chemical Tile Field North 2703-E	Drain/Tile field	\$330,000
216-A-18	Trench	\$180,000	Old Central Shop Area	Foundations	\$721,000
216-A-20	Trench	\$180,000	UPR-200-E-2	Unplanned Release	\$208,000
216-C-5	Crib	\$180,000	UPR-200-E-37	Unplanned Release	\$453,000
216-C-6	Crib	\$180,000	UPR-200-E-43	Unplanned Release	\$110,000
216-C-9	Pond	\$1,138,000	UPR-200-E-50	Unplanned Release	\$208,000
216-C-10	Crib	\$180,000	UPR-200-E-54	Unplanned Release	\$122,000

Table 6-2. Waste Sites with Confirmatory Sampling/No Further Action Preferred Removal Action Alternative. (2 Pages)

Waste Site Code	Waste Site Type	Present Worth	Waste Site Code	Waste Site Type	Present Worth
216-S-4	French Drain	\$180,000	UPR-200-E-55	Unplanned Release	\$87,000
216-S-8	Trench	\$180,000	UPR-200-E-62	Unplanned Release	\$87,000
216-S-16D	Ditch	\$168,000	UPR-200-E-66	Unplanned Release	\$242,000
216-S-19	Pond	\$878,000	UPR-200-E-89	Unplanned Release	\$202,000
216-S-22	Crib	\$180,000	UPR-200-E-143	Unplanned Release	\$311,000
216-T-4A	Pond	\$1,386,000	UPR-200-W-43	Unplanned Release	\$87,000
2607-E1	Septic System	\$867,000	UPR-200-W-51	Unplanned Release	\$242,000
2607-E3	Septic System	\$855,000	UPR-200-W-57	Unplanned Release	\$122,000
2607-E4	Septic System	\$290,000	UPR-200-W-61	Unplanned Release	\$180,000
2607-E5	Septic System	\$348,000	UPR-200-W-63	Unplanned Release	\$87,000
2607-E6	Septic System	\$624,000	UPR-200-W-67	Unplanned Release	\$87,000
2607-E7A	Septic System	\$168,000	UPR-200-W-71	Unplanned Release	\$347,000
2607-E7B	Septic System	\$168,000	UPR-200-W-96	Unplanned Release	\$110,000
2607-E9	Septic System	\$290,000	UPR-200-W-101	Unplanned Release	\$168,000
2607-E12	Septic System	\$1,416,000	UPR-200-W-165	Unplanned Release	\$242,000
2607-EA	Septic System	\$336,000	UPR-600-12	Unplanned Release	\$168,000
2607-EE	Septic System	\$290,000	UPR-600-21	Unplanned Release	\$87,000
2607-W1	Septic System	\$1,348,000	--	--	--
Total Present Worth for CS/NFA sites: \$29,695,000					

CS/NFA = confirmatory sampling/no further action.

Table 6-3. Waste Sites with Removal, Treatment, and Disposal
Preferred Removal Action Alternative. (2 Pages)

Waste Site Code	Waste Site Type	Present Worth	Waste Site Code	Waste Site Type	Present Worth
200-E BP	Burn Pit	\$906,000	216-T-20	Trench	\$164,000
200-E PD	Ditch	\$1,027,000	216-Z-4	Trench	\$448,000
200-E-1	Dumping Area	\$402,000	216-Z-6	Crib	\$495,000
200-E-29	Unplanned Release	\$828,000	218-E-7	Burial Vault	\$4,741,000
200-E-53	Unplanned Release	\$373,000	218-W-7	Burial Vault	\$541,000
200-E-58	Neutralization Tank	\$480,000	218-W-8	Burial Vault	\$800,000
200-E-103	Unplanned Release	\$2,177,000	218-W-9	Burial Ground	\$1,012,000
200-E-107	Unplanned Release	\$754,000	231-W-151	Receiving Vault	\$1,743,000
200-E-109	Unplanned Release	\$445,000	270-E-1	Neutralization Tank	\$483,000
200-E-115	Unplanned Release	\$138,000	291-C-1	Burial Ground	\$731,000
200-E-117	Unplanned Release	\$106,000	600 Original Central Landfill	Sanitary Landfill	\$2,384,000
200-E-123	Unplanned Release	\$153,000	600-40	Dumping Area	\$169,000
200-E-124	Unplanned Release	\$506,000	600-51	Dumping Area	\$131,000
200-E-125	Unplanned Release	\$116,000	600-65	Dumping Area	\$133,000
200-E-128	Unplanned Release	\$116,000	600-66	Dumping Area	\$132,000
200-E-129	Unplanned Release	\$119,000	600-226	Dumping Area	\$132,000
200-E-130	Unplanned Release	\$390,000	600-275	Foundation	\$589,000
200-E-139	Unplanned Release	\$627,000	UPR-200-E-28	Unplanned Release	\$134,000
200-W-1	Mud Pit	\$394,000	UPR-200-E-35	Unplanned Release	\$442,000
200-W-3	Dumping Area	\$729,000	UPR-200-E-39	Unplanned Release	\$137,000
200-W-6	Dumping Area	\$796,000	UPR-200-E-52	Unplanned Release	\$149,000
200-W-12	Dumping Area	\$149,000	UPR-200-E-64	Unplanned Release	\$851,000
200-W-21	Pump Station	\$612,000	UPR-200-E-69	Unplanned Release	\$756,000
200-W-22	Unplanned Release	\$1,850,000	UPR-200-E-95	Unplanned Release	\$822,000
200-W-54	Unplanned Release	\$2,211,000	UPR-200-E-98	Unplanned Release	\$106,000
200-W-63	Unplanned Release	\$318,000	UPR-200-E-101	Unplanned Release	\$241,000
200-W-64	Foundation	\$871,000	UPR-200-E-112	Unplanned Release	\$2,444,000
200-W-67	Unplanned Release	\$287,000	UPR-200-W-23	Unplanned Release	\$109,000
200-W-75	Experiment/Test Site	\$359,000	UPR-200-W-39	Unplanned Release	\$416,000
200-W-80	Spoils Pile/Berm	\$279,000	UPR-200-W-56	Unplanned Release	\$162,000
200-W-82	Pump Station/ Product Piping	\$429,000	UPR-200-W-70	Unplanned Release	\$137,000
200-W-86	Unplanned Release	\$107,000	UPR-200-W-116	Unplanned Release	\$736,000
200-W-90	Unplanned Release	\$106,000	200-E-43	Storage	\$903,000
200-W-92	Dumping Area	\$634,000	UPR-200-E-88	Unplanned Release	

Table 6-3. Waste Sites with Removal, Treatment, and Disposal
Preferred Removal Action Alternative. (2 Pages)

Waste Site Code	Waste Site Type	Present Worth	Waste Site Code	Waste Site Type	Present Worth
200-W-106	Unplanned Release	\$270,000	200-W-81	Unplanned Release	\$2,085,000
207-B	Retention Basin	\$2,524,000	UPR-200-W-58	Unplanned Release	
207-SL	Retention Basin	\$691,000	200-W-83	Unplanned Release	\$2,776,000
209-E-WS-3	Valve Pit	\$317,000	UPR-200-W-41	Unplanned Release	
216-A-9	Crib	\$4,375,000	UPR-200-W-44	Unplanned Release	
216-A-28	Crib	\$406,000	UPR-200-W-46	Unplanned Release	
216-A-34	Ditch	\$1,379,000	216-B-59	Trench	\$2,279,000
216-A-40	Retention Basin	\$1,590,000	216-B-59B	Retention Basin	
216-A-42	Retention Basin	\$4,576,000	UPR-200-E-10	Unplanned Release	\$4,973,000
216-B-2-1	Ditch	\$2,482,000	UPR-200-E-11	Unplanned Release	
216-B-2-2	Ditch	\$2,482,000	UPR-200-E-12	Unplanned Release	
216-B-2-3	Ditch	\$2,794,000	UPR-200-E-20	Unplanned Release	
216-B-3-1	Ditch	\$2,086,000	UPR-200-E-33	Unplanned Release	
216-B-3-2	Ditch	\$2,449,000	UPR-200-W-3	Unplanned Release	\$2,274,000
216-B-3-3	Ditch	\$1,829,000	UPR-200-W-4	Unplanned Release	
216-C-3	Crib	\$498,000	UPR-200-W-65	Unplanned Release	
216-C-7	Crib	\$517,000	UPR-200-W-73	Unplanned Release	
216-S-26	Crib	\$983,000	--	--	--
Total Present Worth for RTD sites: \$89,802,000					

NOTE: Sites grouped together and shaded were costed together; the present worth value represents the total cleanup cost associated with that group of waste sites.

RTD = removal, treatment, and disposal.

Figures 6-1 through 6-3 show the 200-MG-1 OU waste sites and their preferred alternatives.

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Figure 6-1. 200-MG-1 Engineering Evaluation/Cost Analysis Waste Sites and Preferred Alternatives – Outer Area.

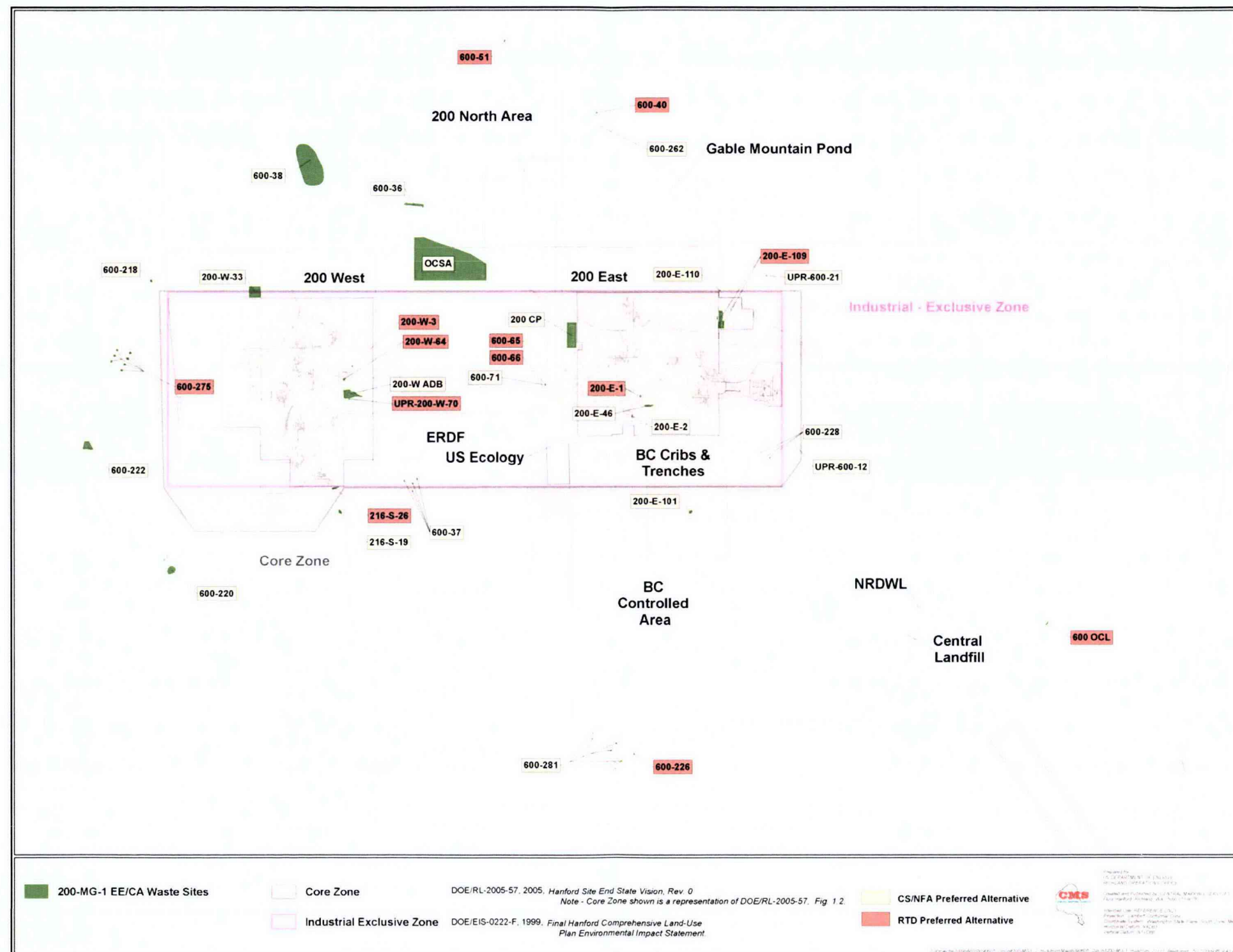
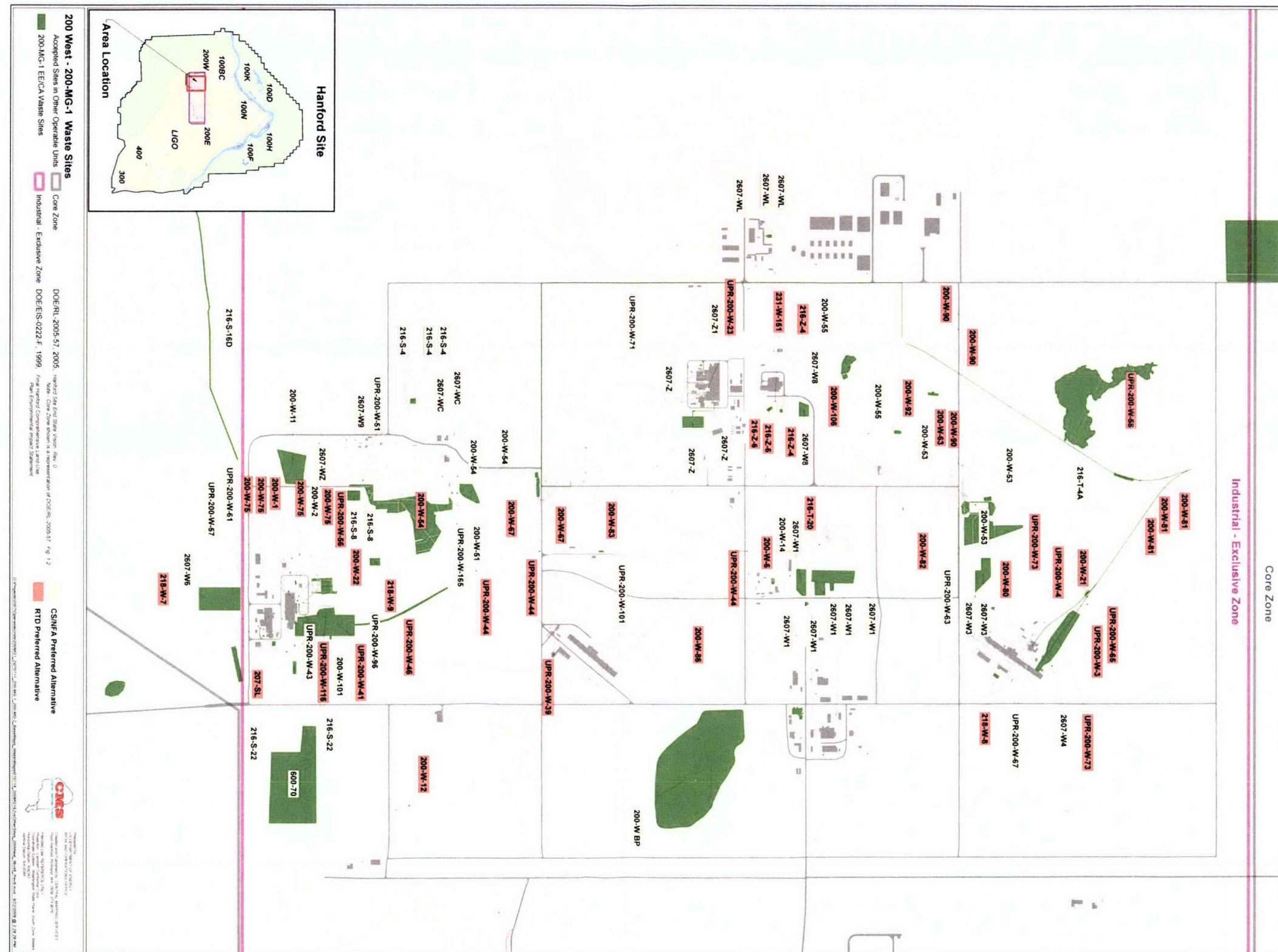


Figure 6-3. 200-MG-1 Engineering Evaluation/Cost Analysis Waste Sites and Preferred Alternatives – 200 West Area.



6.2 200-MG-1 OPERABLE UNIT PATH FORWARD

The path forward following public release of this EE/CA includes the following.

- **Public review and comment.** During this period, the public will have an opportunity to review this EE/CA, and comment on the analyses and preferred removal actions.
- **Action Memorandum.** An action memorandum will be prepared after the public review and comment period provides a concise written record of the decisions for the OU waste sites and removal action alternatives. The memorandum will describe the site history, current activities, and human health and environmental risks. In addition, the action memorandum will outline the proposed actions and costs, and document the approval of the proposed action by the DOE, Richland Operations Office and the lead regulatory agency. Tri-Party Agreement Milestone M-015-49A-T01 makes the following commitment for the 200-MG-1 OU:

“A draft action memorandum for the 200-MG-1 OU will be submitted with a proposed set of M-016 series of interim milestones to establish specific schedules, adjusted to site priorities, to complete the remediation field work by 2024. The proposed set of M-016 milestones will include a process to reevaluate priorities annually.”
- **RAWP.** The RAWP will provide a description of the work to be done and applicable RALs.
- **Removal action implementation.** The culmination of the regulatory and planning documents is the field implementation of the removal actions, including verification that RALs and RAOs have been achieved.

Removal actions at the 200-MG-1 OU waste sites may have a lower priority for cleanup than other OU waste sites because they are expected to pose little potential risk to human health and the environment. Thus, the 200-MG-1 OU removal actions may be performed opportunistically or to complement other ongoing cleanup actions. The 200-MG-1 OU RAWP will contain more schedule details and will be submitted to DOE and Ecology for review and approval.

Because characterization data is limited for most of the 200-MG-1 OU waste sites, the observational screening and excavation guidance activities may reveal different site conditions than presently understood. This necessitates the ability to revise the preferred alternative as characterization data become available. If results of CS indicate that the CS/NFA is inappropriate (i.e., greater than the RALs), then the RTD action will be implemented or the waste site will be removed from this EE/CA and will be evaluated as part of the remaining 200-MG-1 OU. Alternatively, if results of the CS indicate that the RTD is inappropriate (i.e., at or below RALs), then the CS/NFA action will be implemented.

The initial site screening or confirmatory sampling activities will be used to determine compliance with the RALs and the potential need to consider other alternatives. If the RALs are not met at 4.6 m (15 ft), then soil samples may be taken at depths greater than 4.6 m, to characterize potential groundwater risk drivers. A decision matrix for determining the path forward in this situation will be included in the RAWP, including removal of soils, debris, and contaminated structures. In certain cases, using the observational approach to depths slightly greater than 4.6 m bgs may be performed to reduce contaminants to levels below RALs.

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APPENDIX A

WASTE SITE SUMMARY

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APPENDIX A

WASTE SITE SUMMARY

A1.0 INTRODUCTION

This appendix provides summaries of each 200-MG-1 Operable Unit waste site based on the information in the Waste Information Data System (WIDS) and other references. The summaries include the following:

- Site Code
- Representative Site Photographs and/or Schematics
- Site Name
- Site Type
- Facility
- Current and Former Operable Units
- Waste Site Description
- Related Site Structure
- Site Posting
- Release Mechanism and Release Type
- Dimensions
- Potential Contaminants
- Preferred Removal Action
- Estimated Removal Action Present Worth
- References.

Waste site descriptions and other information are quoted directly from WIDS and other references cited at the end of each summary. No modifications have been made to maintain consistent format, and references cited in those descriptions are not provided. The photos and sketches are provided to give a general orientation and site configuration for the 194 waste sites. The photos provided may not give current site conditions.

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200 CP

Site Name: 200 CP, 200 Area Construction Pit, 200 Area Construction Waste Site, Hanford Site Gravel Pit 29

Site Type: Depression/Pit (nonspecific)

Current OU: 200-MG-1

Facility: 200 E Admin Area

Former OU: 200-SW-1

Waste Site Description:

The site is a large, open gravel area. The pit has been used as a source of gravel for various Hanford projects, but is no longer being used. Several truck loads of nonhazardous solid waste, broken blocks of concrete foundation and other debris have been reported to have been placed in the pit over the years. Although older documentation states that the pit was used for disposal of concrete blocks and debris, a 1997 site visit did not visually identify anything in the pit. An E:Mail from Rusty Knight, Fluor 600 Area Landlord, states that he believes the concrete and debris was in the portion of the old gravel pit that was paved over to become the parking lot for the 2704 HV building.

Related Site Structure: None

Site Posting: Not Specified

Release Mechanism: Construction

Release Type: Solid

Dimensions (estimated):

Site Length: 457.2 m (1500.0 ft)

Site Width: 152.4 m (500.0 ft)

Site Area: 69677.3 m² (750000.0 ft²)

Site Depth: 6.1 m (20.0 ft)

Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	None	None
Nonradiological	Unknown	Unknown

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$347,000

References:

WIDS General Summary Report, DOE/RL-2004-60

200-E BP

No Image Available

No Image Available

Site Name: 200-E BP, 200-E Burning Pit, 200 East Burn Pit**Site Type:** Burn Pit**Current OU:** 200-MG-1**Facility:** Solid Waste Area**Former OU:** 200-SW-1**Waste Site Description:**

The burn pit is a large depression. There is limited growing vegetation. The surface is mostly rock and gravel. The burn pit was used for disposal of nonradioactive construction and office wastes. It was also used to burn tumbleweed that were collected off the 200 East Area perimeter fences and to detonate nonradioactive, shock sensitive chemicals. Sometimes paint, solvents and chemicals were dumped there. The 200-E Borrow Pit Demolition Site (200-E8 BPDS) RCRA TSD unit (now clean closed) was located within the 200 East Burn Pit. The site of the chemical detonations is no longer marked or posted. During a 1991 site visit, three enclosures were noted within the basin. A 12-m (40 ft) by 12-m (40-ft) area in the southwest corner (south of 218-E-8) contained several drums, pallets, and sections of steel pipes. A triangular enclosure, extending from two points along the sites border with 218-E-8, to 6 m (20 ft) into the unit, was found empty. In the middle of the basin was a 4.6-m (15 ft) by 4.6-m (15 ft) light chain barricade with asbestos warning signs. The east end of the open ditch became radiologically contaminated from contaminated animal feces and wind blown speck contamination from adjacent contaminated sites (216-A-40 and 244-A Lift Station).

Related Site Structure: The site is associated with WIDS site code 200-E-8 BPDS and UPR-200-E-106.**Site Posting:** Asbestos warning signs**Release Mechanism:** Dumping Area/ Burning**Release Type:** Solid and Liquid**Dimensions (estimated):****Site Length:** 120.1 m (394.0 ft)**Site Width:** 61.3 m (201.0 ft)**Site Area:** 7356.7 m² (79194.0 ft²)**Site Depth:** 4.6 m (15.0 ft)**Cover Thickness:** 0 m (0 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Asbestos, organics, metals

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$906,000**References:**

WIDS General Summary Report, DOE/RL-2004-60

200-E PD

Site Name: 200-E PD 200-E Powerhouse Ditch, 200 East Powerhouse Pond

Site Type: Ditch

Current OU: 200-MG-1

Facility: Semi-Works/ Area, PUREX Area

Former OU: 200-CW-1

Waste Site Description:

The site currently consists of an open ditch, measuring approximately 580 meters, running east to west. The eastern portion of the original ditch was backfilled in 1996, due to a contamination spread. This portion is currently posted with Underground Radioactive signs. The ditch is fed from a 42 inch diameter underground pipeline connected to the 282-E, 283-E and 284-E facilities. The water was discharged from the ditch to a 24 inch diameter pipeline that led to the 216-B-3C Pond. In 1997, when discharges to the 216-B-3C Pond were discontinued, the effluent from the Powerhouse Ditch was diverted to the 200 Area Treated Effluent Disposal Facility (TEDF). The 284-E powerhouse was completely shut down in 1998. After the powerhouse was shutdown, a small amount of effluent continued to be discharged to the ditch from the 282-E and 283-E water treatment facility and reservoir. During 1997 and 1998, blowdown/boiler condensate from the Johnson Controls facility also discharged to the ditch.

Related Site Structure: The ditch is associated with the 284-E Powerhouse, UPR-200-E-100 and UPR-200-E-143. The pipeline associated with the ditch is site code 200-E-237-PL.

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length: 813.0 m (2666.0 ft)

Site Width: 15.0 m (50.0 ft)

Site Area: 12195.0 m² (133300.0 ft²)

Site Depth: 1.8 m (6.0 ft)

Cover Thickness: 0.6 m (2 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Radiological animal feces and windblown specs from nearby contaminated area.
Nonradiological	X	Unknown

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$1,026,000

References:

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69

200-E-1

No Image Available

Site Name: 200-E-1, 284-E Landfill**Site Type:** Dumping Area**Current OU:** 200-MG-1**Facility:** 200 E Admin Area**Former OU:** 200-SW-1**Waste Site Description:**

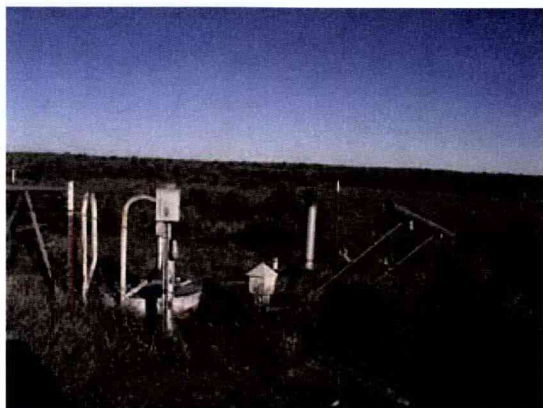
There is no visible evidence of a landfill at this location. A covered concrete pad has been built over the area where the landfill was supposed to be located. The unit consists of asbestos waste encountered during below grade trenching activities. A WIDS site entry form, submitted in 1993 (but initiated in December 1992) states asbestos material was found approximately 9 m (30 ft) west of the 284-E building while digging a water line trench. The form also indicates the material is underneath a 90 Day Storage Pad. The WIDS submittal form cited an October 22, 1990 "DSI" from DR Herman to JW Schmidt as a reference. No dimensions or waste volume was documented. There is no information to indicate if the material was removed from the trench.

Related Site Structure: The site is associated with the 284-E Powerhouse.**Site Posting:** None**Release Mechanism:** Landfill**Release Type:** Solid**Dimensions (estimated):****Site Length:** Irregular m (Irregular ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** Irregular m (Irregular ft)**Cover Thickness:** 0 m (0 ft)**Site Area:** Unknown m² (Unknown ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	None	None
Nonradiological	X	Asbestos

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$402,000**References:**

WIDS General Summary Report, DOE/RL-2004-60

200-E-101**No Image Available****Site Name:** 200-E-101, 200 East Deep Lysimeter Site**Site Type:** Experiment/Test Site**Current OU:** 200-MG-1**Facility:** BC Control Area**Former OU:** 200-UR-1**Waste Site Description:**

The site consisted of three features, one open bottom pit, one closed bottom pit and an underground equipment storage room. The pits were located 34.6 m (114 ft) apart. Both pits were constructed from corrugated steel cylinders that were buried and backfilled with soil. 2/2001, the underground equipment storage room access hatch and vents were found inside a chained area, just west of the dirt access road. The closed bottom pit was found to the north of the equipment room, enclosed in a triangular shaped chained area. Lysimeter access pipes were protruding up through the soil and the rim of the closed bottom lysimeter caisson were visible. The lysimeter pits were used to collect soil information. The sensors in the pits were hard wired to the instrument recorders, located inside the underground equipment storage room. Three, 4-cm (1.6 in.) diameter aluminum pipes were installed to a depth of 18.3 m (60 ft) to allow access of a Neutron Moisture Probe. Other pipes contained soil temperature thermocouples and pressure sensor tubes. The closed bottom lysimeter has a 20 cm (8 in) poured concrete slab at the bottom. Holes were bored through the cement slab so the instruments could access the soil below the caisson. The instrument room housed the recording and measurement instruments. The room was buried approximately 0.3 m (1 ft) below ground level to eliminate climatological influences, such as wind and temperature that could interfere with readings. The room measures 4.5 m (14.8 ft) by 4.8 m (15.8 ft) and was located between the two lysimeter pits. The open bottom lysimeter has been decommissioned. The closed bottom lysimeter remains in a "Standby" mode. It is still operational, but is not being used. The neutron probe is likely to still be in place inside the lysimeter. Verbal reports indicate that early experiments included the use of short-lived isotope tracers. During construction, the instrument cables were hung inside the lysimeters. To hold the cables straight during the filling of the lysimeters with soil, the cables were anchored with 500 g (1.1 lbs) lead bricks. The lead bricks remain buried in the lysimeter structures. The closed bottom pit has not been used since 1991, but is considered to be on stand-by.

Related Site Structure: None**Site Posting:** Not Specified**Release Mechanism:** Test Site**Release Type:** Unknown**Dimensions (estimated):**

Site Length:	18.0 m (59.1 ft)	Site Depth:	Unknown m (Unknown ft)
Site Width:	3.0 m (10.0 ft)	Cover Thickness:	0 m (0 ft)
Site Area:	54.0 m ² (590.6 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Short-lived isotope tracers
Nonradiological	X	Lead bricks

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$180,000

References:

WIDS General Summary Report, DOE/RL-2004-39

200-E-103

No Image Available

Site Name: 200-E-103, Radiologically Controlled Area - South Side of PUREX, PUREX Stabilized Area, 202-A**Site Type:** Unplanned Release**Facility:** PUREX Area**Current OU:** 200-MG-1**Former OU:** 200-UR-1**Waste Site Description:**

The waste site area is covered with gravel and currently posted with URM signs. The site is an area contaminated by many unplanned releases that occurred over time during facility operation. Interim stabilization of the area began on January 4, 1999 and was completed on February 4, 1999. Interim stabilization objectives were to reduce risk to workers, simplify ongoing surveillance and maintenance at the site, and transform the site to a safer and more stable configuration while awaiting the identification and implementation.

Related Site Structure: The site is associated with 202-A, 291-A and the 241-A-151 Diversion Box. Also associated with multiple UPRs that occurred in the area during years of operation activities. Other sites inside this area stabilized with gravel include: 216-A-2, 216-A-4, 216-A-5, 216-A-21 and 216-A-31.

Site Posting: URM**Release Mechanism:** Contaminated Effluent**Release Type:** Liquid**Dimensions (estimated):****Site Length:** Irregular m (Irregular ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** Irregular m (Irregular ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)**Site Area:** 17326.4 m² (186499.8 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$2,176,000**References:**

WIDS General Summary Report, DOE/RL-2004-39

200-E-107

No Image Available

Site Name: 200-E-107, Contamination Area East of PUREX, PUREX E Field**Site Type:** Unplanned Release**Facility:** PUREX Area**Current OU:** 200-MG-1**Former OU:** 200-UR-1**Waste Site Description:**

The site was a large, irregularly shaped, posted Contamination Area. The posted contamination east of the tunnels (218-E-14 and 218-E-15) extended into the double security fence. The area east of the Railroad Cut included the 216-A-32 Crib and the 2607-EE Sanitary Septic Tank and Tile Field, but ended at the inner security fence. In 5/00, a narrow corridor was considered an RBA and separated the northern portion of the CA from the southern portion. Both sections are considered to be one waste site. The entire area was stabilized and reposted as a URM Area in 2001. Residual surface contamination exists from years of PUREX facility operations.

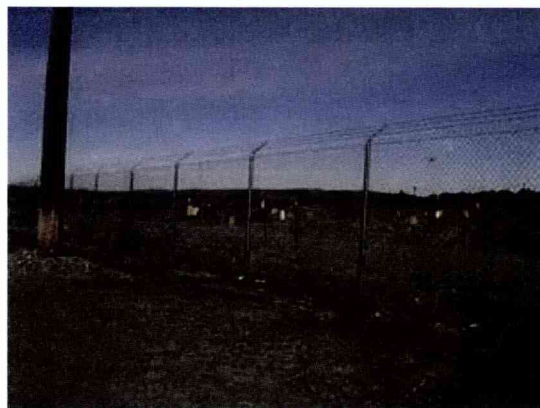
Related Site Structure: The site is associated with the 202-A facility, the 2607-EE septic system and the 216-A-32 crib.

Site Posting: URM**Release Mechanism:** Ventilation Particulate/ Windblown Particulate**Release Type:** Solid**Dimensions (estimated):****Site Length:** 114.6 m (376.0 ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** 34.7 m (114.0 ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)**Site Area:** 3982.2 m² (42868.2 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Alpha contamination detected on motion detectors and aboveground electrical boxes in 2001
Nonradiological	Unknown	Unknown

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$753,000**References:**

WIDS General Summary Report, DOE/RL-2004-39

200-E-109

Site Name: 200-E-109, Contaminated Tumbleweed Accumulation, Contamination Spread in Northeast Corner of 200 East Area

Site Type: Unplanned Release

Current OU: 200-MG-1

Facility: Solid Waste Area

Former OU: 200-UR-1

Waste Site Description:

The site originally consisted of numerous radiologically posted areas along 12th St. and Canton Ave. inside the 200 East Area as well as inside and around the LERF, east of 200 East Area. Some areas were posted CA with a RBA and others were posted High CA with a RBA. The posted areas size and shape varied with additional radiological surveys. By 2004, all the contamination and the individual radiological postings had been removed except one. One area, located on the west side of Canton Ave., was covered with soil and posted as a URM Area. The contamination was reported on occurrence Report RL-PHMC-Solidwaste-2004-0002. When possible, the contaminated vegetation is removed; otherwise, the contamination is surrounded with a radiation barrier. In 01/00, 02/00, 03/00, numerous contaminated tumbleweed fragments were identified inside the LERF facility fence, resulting in the posting of a large CA. Although most of the contaminated fragments and some contaminated soil were picked up and removed from the area, the radiological posted area remains. Contaminated vegetation appears to be coming out of the 218-E-12B Burial Ground or may be contaminated growth on underground radioactive pipelines.

Related Site Structure: UPR-200-E-92 and UPR-200-E-93 reported contaminated tumbleweed fragments along the east perimeter fence of 200 East Area in 1980. The tumbleweeds reported in both UPR-200-E-92 and UPR-200-E-93 were removed from the fence line in 1981. 218-E-12B Burial Ground appears to be source of contaminated vegetation.

Site Posting: URM, CA, RBA, HCA

Release Mechanism: Vegetation (tumbleweeds)

Release Type: Solid

Dimensions (estimated):

Site Length: 75.9 m (249.0 ft)

Site Width: 18.9 m (62.0 ft)

Site Area: 1434.2 m² (15439.5 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0.3-0.6 m (1-2 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Inside East Area perimeter fence: 20,000 - > 100,000 dpm; Outside 200 East Area perimeter fence and around LERF: 2,000-800,000 dpm beta/gamma over the years of 1998-2000.
Nonradiological	None	None

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$444,000**References:**

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-110

No Image Available

Site Name: 200-E-110, Contaminated Tumbleweed Dump Site**Site Type:** Dumping Area**Current OU:** 200-MG-1**Facility:** 200 E Ponds Area**Former OU:** 200-UR-1**Waste Site Description:**

DynCorp Environmental erected the posts and chain around the pile of discarded tumbleweeds in 1998. The pile of weeds had the appearance of being compacted with a garbage compactor truck. The original pile was quite large and it was estimated to be more than one truck load of compacted tumbleweeds. In 1999, the Integrated Soil, Vegetation and Animal Control team removed the bulk of the compacted tumbleweeds and downposted the area to a CA. Some tumbleweed fragments remain in the radiation zone. In October 2003, the area was down posted to a non-controlled area. The radiological posting signs were removed. The site had been surrounded with light duty steel chain and posts and posted as a CA. The CA was surrounded with light duty steel chain and posts and is posted as a RBA. The area was also posted as a RCA. The ground is sandy soil with rocks and chunks of concrete. The area is free of growing vegetation and the tumbleweeds have been removed. Only tumbleweed fragments remained.

Related Site Structure: None**Site Posting:** Non-controlled area (CA, RBA)**Release Mechanism:** Vegetation (tumbleweeds)**Release Type:** Solid**Dimensions (estimated):****Site Length:** 26.5 m (87.0 ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** 17.7 m (58.0 ft)**Cover Thickness:** 0 m (0 ft)**Site Area:** 468.8 m² (5046.5 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Contaminated Vegetation
Nonradiological	None	None

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$86,000

References:

WIDS General Summary Report, DOE/RL-2004-39

200-E-115

No Image Available

Site Name: 200-E-115; Contamination Area East of 241-C Tank Farm**Site Type:** Unplanned Release**Current OU:** 200-MG-1**Facility:** WTP/A Farm Area**Former OU:** 200-UR-1**Waste Site Description:**

The site had been a posted CA surrounded with light posts and chains. Large weeds were growing inside the posted area and there are several radiation flags visible inside the posted area. In June 2004, the site was stabilized with a bio-barrier and gravel. The area was reposted as a URM area. The site was submitted to WIDS as a Discovery Site in October 2000. No radiological survey could be found to provide information about the radiological conditions inside the posted area. It was assumed and later confirmed, that the area had been posted by the East Tank Farm Radiological Control group. They stated that they do routine perimeter surveys of miscellaneous posted areas but do not go inside the areas. A review of underground pipeline locations does not indicate a pipeline at this location. In 1980, a larger area of posted contamination had been located in this same vicinity (see site code UPR-200-E-91). In 1981, the contaminated soil was removed and buried in a depression north of the 216-A-24 Crib. The area was released from radiological posting in 1981. Since so much time has passed, it is difficult to determine if the two areas are related. The Environmental Surveillance radiological control group identified contaminated vegetation inside the posted CA east of 241-C Tank Farm. In January 2001, the contaminated tumbleweeds were removed. A radiological survey done in September 2002 found additional, new growth contaminated tumbleweed reading 350 cpm and small dried tumbleweeds reading 200 cpm. It was recommended the site be surface stabilized, including a biobarrier.

Related Site Structure: The site may be related to UPR-200-E-91.**Site Posting:** CA**Release Mechanism:** Unknown**Release Type:** Solid**Dimensions (estimated):****Site Length:** 12.2 m (40.0 ft)**Site Width:** 10.1 m (33.0 ft)**Site Area:** 122.6 m² (1320.1 ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Contaminated tumbleweed reading 350 counts per minute and small dried tumbleweeds reading 200 counts per minute in January 2001.
Nonradiological	None	None

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$137,000**References:**

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-117

No Image Available

Site Name: 200-E-117, Contamination Zone South of B Plant**Site Type:** Unplanned Release**Current OU:** 200-MG-1**Facility:** B Plant Area**Former OU:** 200-UR-1**Waste Site Description:**

The site is a small, posted CA. Inside the chained area, two steel pipes extend approximately 0.6 m (2 ft) above the ground surface. The pipes have valves on them. The DynCorp ISVAC group submitted this posted area to WIDS as a Discovery site. The reason the area was posted is not known. In 09/00, the blown in tumbleweeds were removed from the posted area. At that time, the valves were surveyed and found to be contaminated with 800 cpm (direct) beta/gamma contamination. No removable contamination was found. According to H-2-44501, Sheet 85, a raw water line extends southward from the 292-B Building and connects to a 30 centimeter (12 inch) raw water line. The water line on the drawing is in the same location as the valves inside the Contamination Area.

Related Site Structure: None**Site Posting:** CA**Release Mechanism:** Unknown**Release Type:** Solid and Liquid (?)**Dimensions (estimated):****Site Length:** 3.0 m (10.0 ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** 3.0 m (10.0 ft)**Cover Thickness:** 0 m (0 ft)**Site Area:** 9.3 m² (100.0 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Area was surveyed and found to be contaminated with 800 cpm (direct) beta/gamma in September 2000.
Nonradiological	None	None

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$105,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-121

Site Name: 200-E-121, Soil Contamination Area East and West of Baltimore Avenue

Site Type: Unplanned Release

Current OU: 200-MG-1

Facility: B Farm Area

Former OU: 200-UR-1

Waste Site Description:

The site is a long, narrow area along the east side of Baltimore Avenue marked with metal posts and chain with SCA signs and two smaller areas on the west side of Baltimore Ave., also posted with Soil Contamination Area signs. The power poles inside the posted area are marked with yellow Fixed Contamination signs. The contamination event occurred in 1996 or 1997. Contamination was identified outside the 241-BX/BY fence extending eastward, down the gravel covered hill and across Baltimore Ave. into the field on the east side of Baltimore Ave. A contamination spread had occurred inside the tank farm, through the top of a containment tent. Two or three areas on the west side of Baltimore Ave. and one large area in the east side of Baltimore Ave. remained posted as CAs. In the 1980's, approximately 6 hectares (15 acres) of property, located east of Baltimore Avenue (north of 241-B Tank Farm), was posted as a large SCA and known as UPR-200-E-144 (alias UN-216-E-44). The posted area included part of this strip of land that is currently posted with SCA signs. However, in 1992, the entire 6 hectare area (including this strip of contaminated soil) was released from radiological control. This was accomplished by scraping the contaminated soil into a pile and placing it on top of the 216-B-7 A&B and 216-B-11 A&B Cribs. The pile of soil and the cribs were covered with clean dirt and reposted with URM signs. The scraped area was released from radiological control by collecting soil samples and radiologically surveying the area. When the project was completed, no radiological posting existed north of the 216-B-7 A&B and 216-B-11 A&B Cribs. In 2003, a small area of growing contaminated tumbleweeds was found on the east side of the posted area. An additional area measuring approximately 3 x 3 m (10 ft x 10 ft) was posted SCA.

Related Site Structure: None

Site Posting: SCA, FC, URM

Release Mechanism: Windblown Particulate

Release Type: Solid

Dimensions (estimated):

Site Length: 200.0 m (656.2 ft)

Site Width: 24.4 m (80.0 ft)

Site Area: 4876.8 m² (52498.6 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: Unknown m (Unknown ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Contaminated Vegetation
Nonradiological	None	None

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$241,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-123

No Image Available

Site Name: 200-E-123, Contamination Area South of 216-B-2 Stabilized Ditches.**Site Type:** Unplanned Release**Facility:** Solid Waste Area**Current OU:** 200-MG-1**Former OU:** 200-UR-1**Waste Site Description:**

In 2001, the area was covered with clean backfill material and down posted to a URM Area. The site had been surrounded with light duty steel posts and chain and was originally posted as a SCA. No significant vegetation was observed on the site. The source of the contamination is unknown. ISVAC Group submitted the posted area to WIDS as a Discovery Site. No radiation surveys are available for this site since it was already posted before being reported by the ISVAC Group.

Related Site Structure: None**Site Posting:** URM**Release Mechanism:** Unknown**Release Type:** Solid and Liquid (?)**Dimensions (estimated):****Site Length:** 7.1 m (23.3 ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** 4.5 m (14.8 ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)**Site Area:** 32.0 m² (343.9 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$152,000**References:**

WIDS General Summary Report, DOE/RL-2004-39

200-E-124

No Image Available

Site Name: 200-E-124, URM on East Side of 275-EA**Site Type:** Unplanned Release**Current OU:** 200-MG-1**Facility:** PUREX Area**Former OU:** 200-UR-1**Waste Site Description:**

The site is posted as a URM Area with steel posts. The site has been stabilized with approximately 0.3 meters of clean soil. A few tumbleweeds were observed growing on the site. Railroad tracks run through the site and are buried under the stabilization soil. The contamination area is where railroad cars were parked and offloaded into the 275-EA Building. The ISVAC Group submitted the posted area to WIDS as a Discovery Site. No survey reports are available for this site since it was found already posted by the ISVAC Group.

Related Site Structure: None**Site Posting:** URM**Release Mechanism:** Leak/ Spill**Release Type:** Solid and Liquid**Dimensions (estimated):****Site Length:** 64.0 m (210.0 ft)**Site Width:** 4.6 m (15.1 ft)**Site Area:** 294.4 m² (3169.2 ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** 0.3 m (1 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Unknown
Nonradiological	None	None

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$505,000**References:**

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-125

No Image Available

Site Name: 200-E-125, Contamination Area Northwest of 244-AR Building.**Site Type:** Unplanned Release**Facility:** PUREX Area**Current OU:** 200-MG-1**Former OU:** 200-UR-1**Waste Site Description:**

The site is posted as a CA with light duty posts and chain. The surface is very sandy soil. No vegetation was observed.

Related Site Structure: None**Site Posting:** CA**Release Mechanism:** Unknown**Release Type:** Solid, Liquid, ?**Dimensions (estimated):****Site Length:** 6.8 m (22.4 ft)**Site Width:** 4.4 m (14.5 ft)**Site Area:** 30.3 m² (325.8 ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** 0 m (0 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Unknown
Nonradiological	None	None

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$115,000**References:**

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-128

No Image Available

Site Name: 200-E-128, Radioactive Contamination "Hot Spot" Under Gravel Road**Site Type:** Unplanned Release**Facility:** Solid Waste Area**Current OU:** 200-MG-1**Former OU:** 200-UR-1**Waste Site Description:**

The area where the contamination is located is marked with two URM signs, on steel posts. The posts are located on the north and south sides of the road. The contamination is located between the signs, under the surface of the gravel road. The road monitor routinely alarms when driven over this area. In 1995, the Environmental Radiological Surveillance group placed two steel posts with URM signs, one on each side of the road, to mark the location of the contamination "Hot Spot". They also evaluated the contamination by removing a layer of soil. This soil contained no detectable contamination, but the readings on the area in the road increased as more soil was removed. The surface or the gravel road initially read 1000 cpm. The readings with 15 cm (6 in.) of soil removed increased to 100,000 cpm. They replaced the soil and posted the road. The nearest known underground radioactive pipeline is located approximately 30 m (100 ft) west of this hot spot. The roads inside 200 East and West Areas are routinely surveyed by a truck mounted with radiation detectors. The detectors are equipped with an alarm that makes an audible sound to alert the driver if radiation above a predetermined limit is detected.

Related Site Structure: None**Site Posting:** URM**Release Mechanism:** Unknown**Release Type:** Solid, Liquid, ?**Dimensions (estimated):****Site Length:** Irregular m (Irregular ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** Irregular m (Irregular ft)**Cover Thickness:** 0 m (0 ft)**Site Area:** Unknown m² (Unknown ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	The surface or the gravel road initially read 1000 cpm. The readings with 15 cm (6 in.) of soil removed increased to 100,000 cpm. Beta/gamma in 1995.
Nonradiological	None	None

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$116,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-129

No Image Available

Site Name: 200-E-129, Stabilized Area on East Side of B Plant Railroad Cut**Site Type:** Unplanned Release**Facility:** B Plant Area**Current OU:** 200-MG-1**Former OU:** 200-UR-1**Waste Site Description:**

The area has been covered with gravel and posted with URM signs. In February 2001, a random radiological survey was done to determine the radiological conditions around the B Plant Railroad cut. The survey was done by the ERC group. A small area of soil contamination was identified near the north end of the railroad cut, on the east side of the soil berm. The area was posted with Contamination Area signs. No determination of the contamination source was made. A small, 2.4 by 4.6 m (8 x 15 ft) CA was identified and posted adjacent to the URM in August 2002. In February 2001, a random radiological survey was done to determine the radiological conditions around the B Plant Railroad cut. The survey was done by the Eberline Radiological Control group. A small area of soil contamination was identified near the north end of the railroad cut, on the east side of the soil berm. The area was posted with CA signs. No determination of the contamination source was made. A small, 2.4 by 4.6 meter (8 by 15 foot) CA was identified and posted adjacent to the URMA in August 2002.

Related Site Structure: None**Site Posting:** URM**Release Mechanism:** Unknown**Release Type:** Solid, Liquid, ?**Dimensions (estimated):****Site Length:** 6.1 m (20.0 ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** 3.7 m (12.0 ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)**Site Area:** 22.3 m² (240.0 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	12,000 (max) dpm per 100 cm probe area convert to 2400 cpm (beta-gamma) in February 2001.
Nonradiological	None	None

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$119,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-13

No Image Available

Site Name: 200-E-13, Rubble Piles from RCRA General Inspection #200EFY95 Item #7**Site Type:** Dumping Area**Facility:** ILAW Area**Current OU:** 200-MG-1**Former OU:** 200-SW-1**Waste Site Description:**

A 1995 site inspection identified this site and described it as numerous rubble piles. These piles contained inert construction debris, such as wood, asphalt, dirt, pipe and concrete. Another site visit occurred in February 1997 when following debris was identified: asphalt paving, concrete, steel pipe, rebar and PVC pipe. A GPS survey on 8/26/1998 observed that debris was concentrated in piles south of an old borrow area. However, there were also isolated piles/berms of debris beyond this concentration, primarily to the west. Some scattered debris and half-buried towels or rags were observed in the borrow area. A site visit on 7/26/1999, confirmed the previous site conditions. A Hanford Facility RCRA Permit General Inspection was conducted on July 17, 1995 and July 18, 1995. During the inspection a site containing numerous rubble piles was identified as meeting the criteria for "solid waste site not previously identified for remedial action" (Hanford Facility RCRA Permit General Inspection Plan, WHC-EP-0850).

Related Site Structure: None**Site Posting:** Not Specified**Release Mechanism:** Dumping Area**Release Type:** Solid**Dimensions (estimated):****Site Length:** Irregular m (Irregular ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** Irregular m (Irregular ft)**Cover Thickness:** 0 m (0 ft)**Site Area:** 13095.0 m² (140953.0 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	None	None
Nonradiological	None	Inert construction debris

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$347,000

References:

WIDS General Summary Report, DOE/RL-2004-60

200-E-130

No Image Available

Site Name: 200-E-130, Stabilized Area on West Side of B Plant Chemical Spur**Site Type:** Unplanned Release**Facility:** B Plant Area**Current OU:** 200-MG-1**Former OU:** 200-UR-1**Waste Site Description:**

The site is covered with fine gravel and posted with URM signs. The site was submitted to WIDS in March 2001 as a Discovery site by the ISVAC group. The site was already posted with URM signs. No radiological survey or other reports could be found to determine when the area was posted or what the radiological conditions were at the time it was posted. However, additional radiation surveys done in August 2002 found contamination levels of 20,000 disintegrations per minute per 100 centimeters square on the edge of the previously posted area.

Related Site Structure: None**Site Posting:** URM**Release Mechanism:** Unknown**Release Type:** Solid, Liquid, ?**Dimensions (estimated):****Site Length:** 19.8 m (65.0 ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** 3.0 m (10.0 ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)**Site Area:** 60.4 m² (650.1 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	20,000 dpm per 100 sq cm in August 2002.
Nonradiological	None	None

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$390,000**References:**

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-139

No Image Available

**Site Name:** 200-E-139, Contamination Area North of C Farm**Site Type:** Unplanned Release**Current OU:** 200-MG-1**Facility:** WTP/A Farm Area**Former OU:** 200-UR-1**Waste Site Description:**

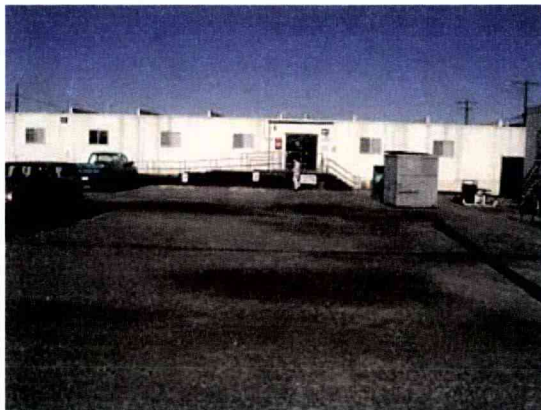
A large posted URM area is located on the north side of 8th St. It contains growing vegetation (rabbit brush and tumbleweeds). A small posted URM area is located on the south side of 8th St. The area on the south side of 8th St has been covered with a biobarrier and gravel. The two areas have been radiologically posted for many years. The areas were surveyed with Global Positioning equipment and mapped in 12/97. No radiological survey can be found to provide any radiological condition information. As of 2/2002, it is not known which Hanford organization erected the posts and chain or when the areas were posted.

Related Site Structure: None**Site Posting:** URM**Release Mechanism:** Unknown**Release Type:** Solid**Dimensions (estimated):****Site Length:** 260.0 m (853.1 ft)**Site Width:** 30.0 m (98.4 ft)**Site Area:** 7800.0 m² (83966.7 ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	X	300-4100 CPM Beta-Gamma in 2004.
Nonradiological	None	None

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$626,000**References:**

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-2

Site Name: 200-E-2, Soil Stains at the 2101-M SW Parking Lot, MO-234 parking Lot

Site Type: Unplanned Release

Current OU: 200-MG-1

Facility: 200 E Admin Area

Former OU: 200-SW-1

Waste Site Description:

Originally described as gravel covered parking lot that contained discolored soil. Two large dark circular stains visible in front of the access ramp at the south end of MO-234. In 10/06 soil sample was taken from the darkest stained area. On 08/12/99 the discolored soil was observed to be primarily concentrated at the north end of the parking lot. Large areas of discolored soil were found just south of MO234 and E of MO413 and stains extended for most of the length of these two MOs. Smaller stains were found throughout the currently in use lot. The parking lot was fairly level, but was lower than either Baltimore (to the east) or 2nd St (to the south). The site was covered with gravel w/ no visible debris or vegetation. Two storm drains were visible in the lot, both slightly depressed relative to the surrounding area. The north end drain was surrounded by the large stained areas; second drain near south end of the lot, E of MO021, but away from the highly stained portion of the lot. The parking lot is actively being used for vehicle parking. Personnel that may have knowledge of past disposal in this unit were interviewed. Based on these interviews, the unit was used as a parking lot for the Telephone and Utilities Department. Used oil has been used for dust abatement; no other dumping is known to have occurred. In 10/06 during a site walkdown sampling was done (B1KHYO). The soil was taken from the darkest stained area in the parking lot. Previously during a site visit on 8/12/99, it was observed that the discolored soil was primarily concentrated at the north end of the parking lot. Large areas of discolored soil were found just south of MO234 and east of MO413. The stains extended for most of the length of these two mobile offices. Smaller stains were found throughout the lot, which was currently in use. The parking lot was fairly level, but was lower than either Baltimore (to the east) or 2nd Street (to the south). The site was covered with gravel and no debris or vegetation were visible. Two storm drains were visible in the lot (miscellaneous streams 709 and 710). The drain at the north end of the lot is slightly depressed relative to the surrounding area and was surrounded by the large stained areas. The second storm drain was near the south end of the lot, east of MO021. It was also slightly depressed relative to the surrounding area, but was away from the highly stained portion of the lot. The unit waste includes used oil for dust abatement. BHI Regulatory Support (B. Vedder) had two concerns about the site. Polychlorinated biphenyls (PCBs) were the biggest concern and heavy metals of lesser concern. PCBs were common in high heat grade hydraulic fluids.

Related Site Structure: None

Site Posting: Not Specified

Release Mechanism: Oil for dust abatement

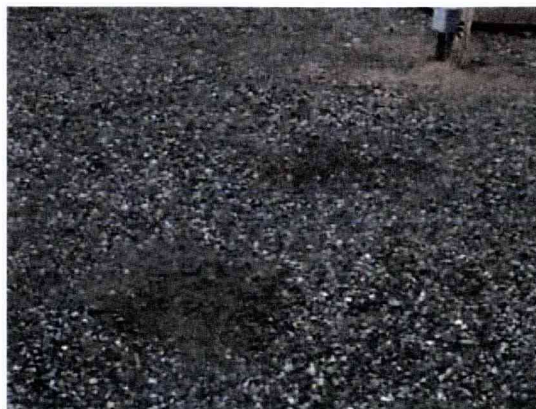
Release Type: Liquid

Dimensions (estimated):**Site Length:** 46.0 m (100.0 ft)**Site Width:** 31.0 m (100.0 ft)**Site Area:** 1426.0 m² (10000.0 ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** 0 m (0 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	None	None
Nonradiological	X	PCBs, used oil for dust abatement, heavy metals.

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$168,000**References:**

WIDS General Summary Report, DOE/RL-2004-60

200-E-26

Site Name: 200-E-26, Heavy Equipment Storage Area, Diesel Fuel Contaminated Soil

Site Type: Unplanned Release

Facility: B Plant Area

Current OU: 200-MG-1

Former OU: 200-UR-1

Waste Site Description:

The site is an area that was used as an equipment staging area for trucks, backhoes, compressors, and other heavy equipment. As of October 2001, the site no longer shows visual evidence of oil contaminating the soil. In 1996, the soil had an odor like diesel fuel, but this was not reported in 2001. The contamination noted in 1996 appeared to be spotty. An electrical receptacle marks each end of the site.

Related Site Structure: None

Site Posting: None

Release Mechanism: Leak/ Spill

Release Type: Liquid

Dimensions (estimated):

Site Length: 36.6 m (120.0 ft)

Site Depth: Unknown m (Unknown ft)

Site Width: 9.1 m (30.0 ft)

Cover Thickness: 0.3-0.6 m (1-2 ft)

Site Area: 334.5 m² (3600.4 ft²)

Potential Contaminants:

	Type	Constituents
Radiological	None	None
Nonradiological	X	Hydrocarbons

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$180,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-29

Site Name: 200-E-29, Unplanned Release From 241-ER-152 Diversion Box

Site Type: Unplanned Release

Current OU: 200-MG-1

Facility: B Plant Area

Former OU: 200-UR-1

Waste Site Description:

The site is a large, irregular shaped, posted URM area. A smaller triangular shaped URM area is located adjacent to the east shoulder of Atlanta Ave., northwest of the larger, stabilized 200-E-29 area. Another small URM area is located adjacent to a row of conex boxes, east of the larger stabilized area. In 11/00, the ISVAC submitted a small posted URM (located adjacent to the east side of the posted 200-E-29 site and a row of conex boxes) to WIDS as a Discovery site. Ground surface contaminated from biological intrusion by mice and ants. In 1996, mouse feces, urine, a mouse nest, several mouse carcasses and an ant hill were identified as contaminated in this area; contamination levels ranged from 7,000 dpm to 300 millirem/hr. The posted area was surveyed/mapped with GPS equipment in 1996. A smaller, adjacent area measured 14.71 sq m (158.30 sq ft). The Dyncorp RCT remember a contaminated backhoe being parked at this location for approximately two years that had originally been parked next to the 241-ER-152 Diversion Box. Two rodent nests were found in the engine compartment of the backhoe that had maximum contamination levels of 50 mR/hr. The contaminated backhoe was moved next to the row of conex boxes in 1996 when the 200-E-29 site was being stabilized. The area surrounding the backhoe was posted as a CA. The backhoe was moved again in 1998; the CA where the backhoe had been sitting was reposted as a URM area. The area remains posted; no radiological surveys can be found to document the radiological conditions inside the area.

Related Site Structure: The site is associated with the 241-ER-152 Diversion Box.

Site Posting: URM

Release Mechanism: Biological Intrusion

Release Type: Solid

Dimensions (estimated):

Site Length: 96.0 m (315.0 ft)

Site Width: 60.0 m (196.9 ft)

Site Area: 5760.0 m² (62006.2 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0.3-0.6 m (1-2 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	7000 dpm - 300 mrem/hr from mouse feces, urine, a mouse nest, several mouse carcasses and an ant hill in 1996; A backhoe engine compartment had 50 mR/hr from mice nests in 1996; Radiation survey found 200 cpm above background where paint was cracked in September 2000.
Nonradiological	None	None

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$828,000**References:**

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-43

Site Name: 200-E-43, Tank Car Storage Area, Regulated Equipment Storage Area, TC-4 Spur Tank Car Storage Area

Site Type: Storage

Current OU: 200-MG-1

Facility: 200 E Admin Area

Former OU: 200-UR-1

Waste Site Description:

This site consists of a chain link fenced portion of the TC-4 Spur located northwest of the PUREX facility. The site was used to store railroad tank cars containing liquid radioactive material that require controls due to radiological dose rate conditions. The fence gate is locked. The area had been posted as a RMA and a URM. However, in January 1999, it was only posted as an URM area. It is also posted with "Danger- Unauthorized Personnel Keep Out" signs. The ties between the rails are covered with gravel. The fenced area was used to stage railroad tank cars that transported liquid waste to the 204-AR waste unloading facility. The fenced in area was originally part of the TC-4 Railroad Spur. It became a separate waste site in 1997 due to programmatic responsibility issues. The inactive railroad spur was assigned to the Environmental Restoration Contractor and the fenced area was assigned to the Project Hanford Contractor. Due to site activities, the number of railcars stored within the fenced area will vary. However, as of January 1999, no railcars are being stored in the fenced area.

Related Site Structure: The site is associated with the TC-4 Railroad Spur and UPR-200-E-88.

Site Posting: URM, RMA

Release Mechanism: Leak/ Spill

Release Type: Liquid

Dimensions (estimated):

Site Length: 65.5 m (215.0 ft)

Site Width: 50.0 m (164.0 ft)

Site Area: 3275.8 m² (35263.4 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0.3-0.6 m (1-2 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	Unknown	Unknown

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$902,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-46

Site Name: 200-E-46, RCRA Permit General Inspection #200EFY96 Item #3

Site Type: Dumping Area

Current OU: 200-MG-1

Facility: 200 E Admin Area

Former OU: 200-SW-1

Waste Site Description:

The site appears to be an old lay down area. Scattered debris is visible over a large area. Some of the items mentioned in the RCRA inspection have been removed as stated in the Cleanup Activities Section. Materials observed at the site include wire rope, a steel railroad rail, a metal bar, wood, fiberglass insulation, aluminum cans coal, pipe, aluminum wire, copper wire, concrete, and glass. Most of the debris is in relatively small pieces. Large debris include the steel railroad rail, iron bar, wire rope, and concrete.

Related Site Structure: None

Site Posting: Not Specified

Release Mechanism: Dumping Area

Release Type: Solid and Liquid (?)

Dimensions (estimated):

Site Length: 150.0 m (492.0 ft)

Site Width: 50.0 m (164.0 ft)

Site Area: 7500.0 m² (80688.0 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	None	None
Nonradiological	X	Unknown

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$347,000

References:

WIDS General Summary Report, DOE/RL-2004-60

200-E-53

Site Name: 200-E-53, Contaminated Zone Adjacent to 218-E-12B and 218-E-8, Overground Storage Area, Above Ground Storage Area

Site Type: Unplanned Release

Current OU: 200-MG-1

Facility: Solid Waste Area

Former OU: 200-UR-1

Waste Site Description:

Rockwell document RHO-CD-1048 and photographic documentation from 1982 indicate this area was used to store contaminated equipment. This is an irregular, wedge-shaped site with a rope barrier and posted with Soil Contamination signs, first documented in 1987. Contamination readings ranged from 600 cpm to 30 mrem/hr beta (1.5 mrem/hr gamma). Contaminated rabbit feces found in 1991. In 10/93, the area was re-identified in conjunction with a routine survey of the 218-E-12B Burial Ground. A relatively small Surface CA had been previously established. Additional radiological surveying beyond the boundaries of the contamination zone found several more areas of contamination; the posted area was enlarged to include the majority of the newly identified contamination. In 1997, the rope was found on the ground; evidence of vehicle traffic driving through the area. No one claims responsibility for maintenance of the posted CA. On 10/22/97, a rope barrier was re-established.

Related Site Structure: This site is associated with UPR-200-E-50 and UPR-200-E-62.

Site Posting: SCA

Release Mechanism: Biological Intrusion/Animal Feces

Release Type: Solid

Dimensions (estimated):

Site Length: 125.0 m (410.1 ft)

Site Width: 80.0 m (262.5 ft)

Site Area: 10000.0 m² (107649.6 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	600 cpm - 30 mrem/hr beta (1.5 mrem/hr gamma) between January - September 1987; 75000 dpm found in October 1993.
Nonradiological	None	None

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$373,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-E-58

No Image Available

Site Name: 200-E-58, 216-A-5 Neutralization Tank, 216-A-5 NU, Tank A5, IMUST, Inactive Miscellaneous Underground Storage Tank

Site Type: Neutralization Tank

Current OU: 200-MG-1

Facility: PUREX Area

Former OU: 200-PW-2

Waste Site Description:

The site is an underground tank used to neutralize acidic waste prior to disposal. A 101 cm (40 in.) riser is visible at the surface. The cylindrical tank sits vertically on a concrete pad. The tank is constructed of welded stainless steel and has a capacity of approximately 28,400 L (7,500 gal). A 20-cm (8 in) inlet pipe enters from the north near the base of the tank. The inlet connects into distribution piping constructed of 20 cm (8 in) stainless steel pipe welded into a cross with 1.9 cm (3/4 in) holes drilled at 23 cm (9 in) intervals. A 20 cm (8 in) outlet pipe exits to the south near the top of the tank. A 101 cm (40 in) riser extends 30 cm (12 in) above the surface. The "charging riser" is for adding limestone to the tank to act as a neutralizing agent. Acidic liquid waste entered the tank from the bottom and was forced upward through a bed of limestone. Interaction with the limestone neutralized the waste prior to overflow through the outlet pipe. The neutralized waste was discharged to a crib. Due to the design of the tank and the orientation of the inlet and outlet piping, it is highly likely that this tank and some of the inlet piping still contain liquid waste. Because the inlet piping angles sharply downward before entering the tank and the outlet piping is at the top of the tank, the structure would act like a trap where liquid collects at the lowest point, in this case, the tank. The tank was used to neutralize acid waste from PUREX prior to ground disposal. From 1955 to 1961, the neutralized waste was discharged to the 216-A-5 Crib. From 1961 to 1987 the neutralized waste was discharged to the 216-A-10 Crib. The 216-A-10 Crib is a permitted RCRA Treatment, Storage or Disposal (TSD) unit. Even though the 216-A-5 Neutralization Tank was connected to the crib, it is not covered under its Part A permit.

Related Site Structure: The site is related to the 202-A Building (PUREX Canyon), the 216-A-5 Crib, and the 216-A-10 Crib. The pipeline to the 216-A-5 Sample Pit #4 is 200-E-241-PL.

Site Posting: Not Specified

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length:	None m (None ft)	Site Depth:	4.9 m (16.0 ft)
Site Width:	3.5 m (11.3 ft)	Cover Thickness:	0 m (0 ft)
Site Area:	8.7 m ² (93.5 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$480,000

References:

WIDS General Summary Report, DOE/RL-2004-60, DOE/RL-2004-85, DOE/RL-2004-25

200-E-6

No Image Available

No Image Available

Site Name: 200-E-6, Septic Tank, Sanitary Sewer Repair and Replacement 2607-E4**Site Type:** Septic System**Facility:** B Plant Area**Current OU:** 200-MG-1**Former OU:** 200-ST-1**Waste Site Description:**

The septic tank is surrounded by chain with four steel posts painted yellow. The tank is posted with a septic tank sign. The tank has two 10-cm (4-in.) PVC pipes which protrude vertically from the ground. The sanitary tile field is surrounded with a steel post and chain barricade and is posted with Caution URM signs. The septic system received waste from the 221-B Building. This septic system was installed to replace 2607-E4 septic system. The system was abandoned in 1998.

Related Site Structure: None**Site Posting:** ST, URM**Release Mechanism:** Sanitary Effluent**Release Type:** Solid and Liquid**Tank:****Dimensions (estimated):**

Site Length: Unknown m (Unknown ft)
Site Width: Unknown m (Unknown ft)
Site Area: Unknown m² (Unknown ft²)

Site Depth: Unknown m (Unknown ft)
Cover Thickness: None m (None ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Tile Field:**Dimensions (estimated):**

Site Length: 21.3 m (70.0 ft)
Site Width: 6.1 m (20.0 ft)
Site Area: 130.2 m² (1400.0 ft²)

Site Depth: Unknown m (Unknown ft)
Cover Thickness: Not Specified m (Not Specified ft)

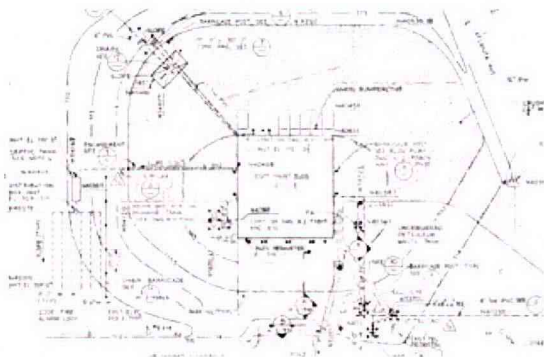
Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$180,000

References:

WIDS General Summary Report, DOE/RL-2002-14

200-E-7

No Image Available

Site Name: 200-E-7, 2607-EO Septic Tank & Tile Field**Site Type:** Septic System**Current OU:** 200-MG-1**Facility:** 200 E Admin Area**Former OU:** 200-ST-1**Waste Site Description:**

The tank is part of the 2607-EP System. Current and proposed additions to this system bring its design daily flow to 20,440 liters (5400 gallons). The tank was pre-fabricated with a 1500 gallon first chamber and a 1000 gallon second chamber. The associated septic field has been abandoned.

Related Site Structure: Active system supports 2711E (automotive shop). Installed in 1994.**Site Posting:** None**Release Mechanism:** Sanitary Effluent**Release Type:** Liquid**Tank:****Dimensions (estimated):****Site Length:** Unknown m (Unknown ft)**Site Width:** Unknown m (Unknown ft)**Site Area:** Unknown m² (Unknown ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** None m (None ft)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Tile Field:**Dimensions (estimated):****Site Length:** 19.8 m (65.0 ft)**Site Width:** 15.2 m (50.0 ft)**Site Area:** 301.9 m² (3250.0 ft²)**Site Depth:** 0.9 m (3.0 ft)**Cover Thickness:** Not Specified m (Not Specified ft)

Potential Contaminants:

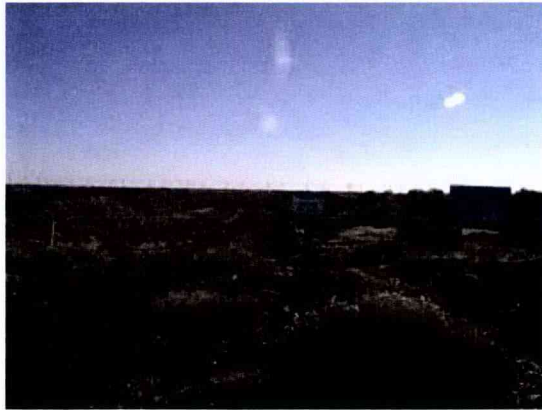
	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$289,000

References:

WIDS General Summary Report, DOE/RL-2002-14

200-W ADB**Site Name:** 200-W ADB, 200-W Ash Disposal Basin**Site Type:** Coal Ash Pit**Current OU:** 200-MG-1**Facility:** T Plant Area**Former OU:** 200-SW-1**Waste Site Description:**

The site is an area of dark soil with cheatgrass growing on the surface. A small depression can be seen in the middle of the site. The Ash Disposal Basin received coal ash slurry and ash from the operation of the coal fired 284-W Powerhouse. A 1954 drawing shows an underground ash slurry pipeline extending from the northeast corner of the 284-W Powerhouse to the northwest corner of the Ash Disposal Basin. Later, the site received trucked material, dredged from the 200 West Powerhouse Ash Pit, located south of the powerhouse, on the west side of Beloit Ave. Hanford Site drawings generally refer to the entire large, irregular shaped excavation east of Beloit Ave. as the Ash Pit or Ash Basin. Some site drawings refer to the southern portion of the large area as the Burn Pit or Burning Ground. Reference to the 200 West Area Burn Pit and 200 West Ash Disposal Basin are often confused. A Tiger Team finding for disposing of steam plant ash without a permit prompted sampling of wet flyash and bottom ash from the 200 Area power plants. Sample results determined the ash to be non-dangerous and non-corrosive and not regulated under Washington Administrative Codes. Therefore, no permit was required to dispose of the steam plant ash.

Related Site Structure: The site is associated with the 284-W Powerhouse operation the 200-W Ash Pit. The open pit adjacent to the south side of the 200-W ADB is known as the 200-W Burn Pit (200-W BP).

Site Posting: Not Specified**Release Mechanism:** Ash Disposal**Release Type:** Solid**Dimensions (estimated):****Site Length:** 244.0 m (800.0 ft)**Site Width:** 183.0 m (600.0 ft)**Site Area:** 44652.0 m² (480000.0 ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** 0 m (0 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	None	None
Nonradiological	Unknown	Unknown

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$347,000

References:

WIDS General Summary Report, DOE/RL-2004-60

200-W BP

Site Name: 200-W BP, 200-W Burning Pit, Pit 34

Site Type: Burn Pit

Current OU: 200-MG-1

Facility: T Plant Area

Former OU: 200-SW-1

Waste Site Description:

The site is a large open pit. The 200 Area office waste and non-radioactive construction debris and tumbleweeds have been brought to this site and burned. According to Dave Phipps in April 2002, this site is used as a staging area for uncontaminated tumbleweeds from the 200 Area fences. They are burned bi-annually in the spring and the fall. The area is also used as a source of clean backfill (gravel) material. In 1984, a one time chemical demolition event occurred inside the northern portion of the current 200-W Burn Pit. However, the title of the closure document is the 200 West Area Ashpit Demolition Site Closure Plan (DOE/RL-92-54). A review of this document confirms the location of the chemical demolition was inside the 200-W Burn Pit. Drawing H-2-1495 and historical photograph #3755 show another disposal pit/burn pit, located south of 16th Street, east of Beloit Ave. Early references to the 200 West Burn Pit could be referring to this location. The 200 West Area Ash Disposal Basin had been a very large, irregularly shaped excavation. The burn pit is considered to be the southern portion of the large excavation. Hanford Site drawings generally refer to the entire large, irregular shaped excavation east of Beloit Ave. as the Ash Pit or Ash Basin. Some site drawings refer to the southern portion of the large area as the Burn Pit or Burning Ground. The burn pit portion is shown as being located in the southwest corner of the Ash Disposal Basin on drawing H-2-34762. Reference to the 200 West Area Burn Pit and 200 West Ash Disposal Basin are often confused. Now that the northern portion of the original Ash Disposal Basin has been filled to grade with ash, only the 200-W Burn Pit portion is an open excavation. In October 1992, prior to being used as a source of clean backfill material, radiological surveys and soil sampling were performed. A total of ten samples were collected from five locations inside the burn pit area. One sample at each location was collected at the surface and a second sample at each location was collected at a depth of approximately 1 meter (3 feet).

Related Site Structure: The burn pit is associated with the 200-W Ash Disposal Basin (200-W ADB), 200-W ADS and 200-W-71.

Site Posting: Not Specified

Release Mechanism: Dumping Area

Release Type: Solid

Dimensions (estimated):

Site Length: 61.0 m (200.0 ft)

Site Width: 61.0 m (200.0 ft)

Site Area: 3721.0 m² (40000.0 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	In 1955, 3 broken boxes that contained radioactive waste were discovered in the pit and moved to a separate burial ground. In 1973 a routine survey revealed several spots of beta-gamma radiation measuring from 5,000-50,000 c/m.	Beta-gamma radiation measuring from 5,000-50,000 c/m.
Nonradiological	X	Unknown

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$347,000**References:**

WIDS General Summary Report, DOE/RL-2004-60

200-W-1**Site Name:** 200-W-1, REDOX Mud Pit West**Site Type:** Mud Pit**Current OU:** 200-MG-1**Facility:** REDOX Area**Former OU:** 200-SW-1**Waste Site Description:**

The site was originally described as a pit that is approximately 15.3 m (50 ft) by 31 m (100 ft). The surface of the area has the appearance of drilling mud, and has the typical surface that is left from evaporated or percolated liquid. Vegetation is absent from the area. The following observations were made during a field visit in August 1999. The site is in a shallow depression. It is difficult to discern the precise boundaries of the site because the general area appears to have been disturbed by heavy equipment. One section of the site is devoid of vegetation and appears to have some soil discoloration. West of this section is an area where the ground surface is broken up and sparsely vegetated. These two distinctive areas are surrounded by sparse to moderate vegetation cover, composed primarily of cheatgrass and tumbleweeds. An approximately 2.5-cm (1-in.) diameter rubber hose was seen near the west edge of the site and some lumber and a wooden stake were found at the unvegetated spot. Some older employees that were interviewed stated that plutonium contaminated ventilation equipment was rinsed somewhere near this area.

Related Site Structure: The site is possibly associated with 200-W-17 and 200-W-18.**Site Posting:** Not Specified**Release Mechanism:** Equipment Decontamination**Release Type:** Liquid**Dimensions (estimated):****Site Length:** 30.5 m (100.0 ft)**Site Width:** 15.2 m (50.0 ft)**Site Area:** 464.5 m² (5000.5 ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** 0 m (0 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$394,000

References:

WIDS General Summary Report, DOE/RL-2004-60

200-W-101

Site Name: 200-W-101, Contaminated Material West of 216-S-12 Crib

Site Type: Dumping Area

Current OU: 200-MG-1

Facility: REDOX Area

Former OU: 200-SW-2

Waste Site Description:

The site consists of two large boxes and a rusted metal shaft surrounded with light post and chain. The area had been posted with CA and RA signs. The metal shaft is approximately 18 m (60 ft) long and extends beyond (outside) the posted area chain. The radiological posting was changed to CA in April 2002. Conversations with BHI and CHG employees revealed that this material has been sitting at this location for approximately 15 years. In 1999, an attempt was made to remove and bury the material. In 1999, BHI was responsible for both the REDOX inactive facility and the 216-S-12 Crib, but had no knowledge of the source of the material or who erected the radiological zone. In 1999, BHI was surface stabilizing the adjacent REDOX railroad cut and considered placing the material into the area being covered with dirt and burying it along with the railroad track. They contacted the Tank Farm contractor to see if they claimed ownership of the material. The Tank Farm contractor personnel had no knowledge of this material either. BHI stabilized the railroad cut in 1999 without disturbing this posted material, because they could not find a responsible individual to give them permission to move it. A radiological survey was done on April 2, 2002 to determine the radiological conditions inside the posted area. No contamination was detected on the wooden boxes or the ground surface. A small amount of contamination (2000 dpm) was found on a piece of hose. The radiological posting was changed from RA/CA to CA.

Related Site Structure: None

Site Posting: CA

Release Mechanism: Dumping Area

Release Type: Solid

Dimensions (estimated):

Site Length: 12.0 m (40.0 ft)

Site Width: 6.0 m (20.0 ft)

Site Area: 72.0 m² (800.0 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	None	Minor debris

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$86,000

References:

WIDS General Summary Report, DOE/RL-2004-60

200-W-106

Site Name: 200-W-106, Soil Contamination Area Adjacent to 200-W-55

Site Type: Unplanned Release

Current OU: 200-MG-1

Facility: T Farm Area

Former OU: 200-UR-1

Waste Site Description:

Soil contamination was found and posted on 2/13/2003 (200-W-55 dump site). Soil had apparently been placed in the location of the contamination. The surrounding area contains large, growing rabbit- and sagebrush, indicating the vegetation was established many years ago. The area containing the soil contamination has little or no vegetation. On 2/13/2003, a Radiological Control Technician was passing the 200-W-55 dump site in his vehicle. Because he was unfamiliar with the dump site, he decided to do a cursory radiation survey. The technician found soil contamination on the top rim of the debris pit. Occurrence Report RL-PHMC-FSS-2003-0002 was issued describing the contamination found. Closer inspection of the area showed that soil had apparently been placed in the location of the contamination. The surrounding area contains large, growing rabbit and sage brush, indicating the vegetation was established many years ago. The area containing the soil contamination has little or no vegetation. The maximum surface contamination level was 3600 cpm. A least fifteen separate small contaminated areas were identified. Contamination levels became larger at depth. The 300 cpm surface reading rose to 7600 cpm at a depth of 7.6 cm (3 in.). Additional investigations were done to determine the depth of the contamination. The majority of the contamination was found to be within 15 cm (6 in.) of the surface. A maximum reading of 20,100 cpm was found at a depth of 10 cm (4 in.).

Related Site Structure: None

Site Posting: SCA

Release Mechanism: Soil Contamination

Release Type: Solid

Dimensions (estimated):

Site Length: 20.4 m (67.0 ft)

Site Width: 16.2 m (53.0 ft)

Site Area: 329.9 m² (3551.3 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	3600 cpm. At least 15 separate, small contaminated areas were found; contamination levels larger at depth. 300 cpm surface reading rose to 7600 cpm at depth of 7.6 cm (3 in.). Add'l investigations found majority of contamination to be within 15 cm (6 in.) of surface. Max reading 20,100 cpm found at 10 cm (4 in.) depth found on February 13, 2003.
Nonradiological	Unknown	Unknown

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$269,000**References:**

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-11

Site Name: 200-W-11, Concrete Foundation South of 241-S, S-Farm Foundation and Dump Site

Site Type: Dumping Area

Current OU: 200-MG-1

Facility: 200 W Ponds Area

Former OU: 200-SW-1

Waste Site Description:

A concrete foundation, small burn areas, bare areas and scattered debris are located south of 241-S Tank Farm. The site was identified on April 19, 1995 during a RCRA General Inspection. No drawings related to the foundation have been identified. The debris includes barbed wire, welding rods, oil cans, paint cans, glass, and vehicle parts. It may have been used as a laydown yard, support fabrication area, or vehicle maintenance. It is possible it supported the construction of 241-S-Farm.

Related Site Structure: The site is possibly associated with the construction of the 241-SX, 241-SY, 241-S Tank Farms.

Site Posting: Not Specified

Release Mechanism: Unknown

Release Type: Solid and Liquid (?)

Dimensions (estimated):

Site Length: Irregular m (Irregular ft)

Site Width: Irregular m (Irregular ft)

Site Area: 11505.2 m² (123840.4 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	None	None
Nonradiological	X	Paint, solvent

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$202,000

References:

WIDS General Summary Report, DOE/RL-2004-60

200-W-12

No Image Available

Site Name: 200-W-12, 201-W Soil Mound and Plastic Pipe**Site Type:** Dumping Area**Current OU:** 200-MG-1**Facility:** REDOX Area**Former OU:** 200-SW-1**Waste Site Description:**

The site consists of a soil mound with one 0.76-m (2.5-ft) aboveground plastic pipe and one 20-cm (8-in.) aboveground plastic pipe topped with tees and elbows. There are also insulated electrical wires and an electrical heat controller. During the 1970's, the Atlantic Richfield (ARCO) and Rockwell Research Departments used this area for testing equipment and processes to support the waste management operations. This area was selected for testing because it was adjacent to the REDOX facility (where the Research Department offices were located) and because the area did not contain any contaminated facilities or vadose contamination. This site is located near other test sites and pits that were used to test grout, slurry and soil infiltration in the late 1970's and early 1980's. It is suspected that this site was also a test site. Several employees that were involved in the grout, slurry and infiltration tests were interviewed. None of the employees had any knowledge of what this mound with polyvinyl chloride (PVC) piping was used for. The RCRA Permit General Inspection Report notes that "It appears there is a tank in the ground under the vents." The comment section of the Discovery Site Evaluation Checklist from 6/25/96 states that "Per discussion with K. Moss, unable to discount the potential for waste disposal based on interviews. Considered a SWMU based on discarded materials at the site." Thus, while this site is most likely another test site like the adjacent 200-W-35, it cannot be rejected as a waste management unit based on available information.

Related Site Structure: The site may be associated with other adjacent test sites. See 200-W-35 and 200-W-10.**Site Posting:** Solid Waste Management Unit**Release Mechanism:** Equipment Testing**Release Type:** Solid and Liquid (?)**Dimensions (estimated):****Site Length:** 3.7 m (12.0 ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** 1.8 m (6.0 ft)**Cover Thickness:** 0 m (0 ft)**Site Area:** 6.7 m² (72.0 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	None	None
Nonradiological	X	Unknown

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$149,000

References:

WIDS General Summary Report, DOE/RL-2004-60

200-W-14

No Image Available

Site Name: 200-W-14, 200 West Heavy Equipment Storage Area**Site Type:** Dumping Area**Facility:** T Plant Area**Current OU:** 200-MG-1**Former OU:** 200-UR-1**Waste Site Description:**

The site appears as a gravel parking lot. The site was a heavy equipment (including cranes, forklifts, diesel generators, backhoes, vehicles) parking area with five or six large spots of petroleum contaminated soil. Contaminated soil is encountered down to a depth of 0.61 m (2 ft) or more. During the 1995 site visit, the equipment continued to overflow and leak; no drip pans or containment were used.

Related Site Structure: The site is associated with the building trades craft shops.**Site Posting:** Not Specified**Release Mechanism:** Parking Area**Release Type:** Liquid**Dimensions (estimated):****Site Length:** 24.4 m (80.0 ft)**Site Depth:** 0.6 m (2.0 ft)**Site Width:** 9.1 m (30.0 ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)**Site Area:** 223.0 m² (2400.1 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	None	None
Nonradiological	X	Petroleum

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$168,000**References:**

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-2**Site Name:** 200-W-2, REDOX Berms West**Site Type:** Spoils Pile/Berm**Current OU:** 200-MG-1**Facility:** REDOX Area**Former OU:** 200-SW-1**Waste Site Description:**

The majority of the area is level, with evidence of soil disturbance over several acres. The site consists of two bermed areas. One berm is approximately 1.5 m (5 ft) high by 9.2 m (30 ft) wide. The other berm is approximately 3.1 m (10 ft) high and 15.3 m (50 ft) wide. The berms are not marked or posted. The wastes at this unit are unknown, but the berms may cover contaminated soil or debris. It has been reported that ventilation equipment had been cleaned in the area, but the exact location cannot be identified.

Related Site Structure: None**Site Posting:** None**Release Mechanism:** Equipment Decontamination**Release Type:** Solid and Liquid (?)**Dimensions (estimated):**

Site Length:	Irregular m (Irregular ft)	Site Depth:	Unknown m (Unknown ft)
Site Width:	Irregular m (Irregular ft)	Cover Thickness:	0 m (0 ft)
Site Area:	248.0 m ² (2670.0 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$180,000**References:**

WIDS General Summary Report, DOE/RL-2004-60

200-W-21

Site Name: 200-W-21, 204-T Unloading Station, T-Plant Waste Railcar Unloading Facility, Unloading Station 1 and Unloading Station 2

Site Type: Pump Station

Current OU: 200-MG-1

Facility: T Plant Area

Former OU: 200-LW-1

Waste Site Description:

The unloading station consisted of two unloading platforms, Unloading Station 1 and Unloading Station 2. The platforms and piping from both stations were removed in 1996. The area has a short railroad siding extending from the main rail line into T-Plant. The concrete structure foundations remain and are posted with URM signs. The platform structures were used to unload 300 Area liquid laboratory waste sent in railroad tanker cars from the 340 Facility. The waste was pumped into the adjacent 216-T-34 and 216-T-35 Cribs. Approximately 30 m³ (40 yd³) of contaminated soil was removed from the base of the unloading station in 1967. Environmental Surveillance Inspection Report EP-87-51 written in 1987 and Radiological Problem Report T-009-89 written in 1989 identified additional surface contamination. In 1989, contamination was found in two drains (one drain for each unloading platform structure) that included 4,000 dpm of beta/gamma contamination and 1,800 dpm of alpha contamination. Smears of the eastern drain found 600 dpm of alpha contamination was removable.

Related Site Structure: The site is associated with the 216-T-34 crib, 216-T-35 crib and the 340 facility in the 300 Area. The pipeline from Unloading Station 1 to the 216-T-34 crib is site code 200-W-196-PL. The pipeline from Unloading Station 2 to the 216-T-35 crib is site code 200-W-197-PL.

Site Posting: URM

Release Mechanism: Leak/ Spill

Release Type: Liquid

Dimensions (estimated):

Site Length: 26.0 m (87.0 ft)

Site Depth: 1.5 m (5.0 ft)

Site Width: 7.0 m (23.0 ft)

Cover Thickness: 0.1 m (0.5 ft)

Site Area: 182.0 m² (1959.0 ft²)

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$612,000

References:

WIDS General Summary Report, DOE/RL-2001-66, DOE/RL-2006-56, DOE/RL-2005-61

200-W-22

Site Name: 200-W-22, 203-S/204-S/205-S Stabilized Area

Site Type: Unplanned Release

Current OU: 200-MG-1

Facility: REDOX Area

Former OU: 200-PW-2

Waste Site Description:

Waste processed and stored in this area included contaminated UNH from REDOX and PUREX, Thorium Nitrate from PUREX, 100-N Reactor decontamination waste and 300 Area Laboratory waste. Radiological contaminants may be present in and around the remaining contaminated structures (cement basins and piping) that were not removed in the 1983 stabilization efforts. All aboveground surface features have been removed. The site is currently posted as an URM. There are also two small, posted URMA's located under the abandoned steam line, on the south end of this site. The 203, and 205-S Facilities were constructed in the early 1950's to process and decontaminate the uranyl nitrate hexahydrate (UNH) produced by REDOX operations. The primary process unit consisted of a column filled with silica gel that removed traces of fission products from the UNH. The silica gel column (SG-1) was located in the underground 205-S Vault. The vault also contained a waste neutralization tank. Operations in the vault were accomplished remotely. The 205-S Facility was a two story, aboveground, chemical make-up building. It contained two chemical make-up tanks, a UNH sample room and extensive piping connected to the REDOX facility and the underground vault. The 203-S Facility was an aboveground UNH storage facility that consisted of two 19,000 L (5,000 gal) stainless steel tanks that were set in an open concrete basin. There was also a 204-S Tank Farm, that consisted of four 190,000 L (50,000 gal) aboveground tanks set in two open concrete basins. A UNH Unloading Facility was located at the adjacent railroad siding. An aboveground UNH pipeline connected the 203-S, 204-S, 205-S Area to the 224-U Facility. During the REDOX Plant operation, the UNH solution was pumped from REDOX to the 205-S silica gel column for purification. The purified UNH was stored in the 203 and 204 tanks and the routed to 224-U, via an above ground line, for final processing. The fission products left in the silica gel column were stripped out with nitric acid. The acid was neutralized and send to cribs. UNH from the PUREX Plant were transported by truck to the unloading station and placed in the 204-S tanks. The PUREX solutions were then processed through the silica gel column. After REDOX shut down (1965), the 203-S and 205-S were placed on standby. The Unloading Station was converted to a railcar unloading station. The 204-S tanks continued to store material from the Unloading Station. Shipments included thorium nitrate from PUREX, 100-N Reactor decontamination solutions and 300 Area Laboratory wastes. The thorium nitrate was stored in tanks 204-S-1, 204-2 and 204-3. After an extended storage time, the thorium nitrate was shipped to Fernald, Ohio. The 203-1, 203-2 and 203-3 tanks were flushed. Tank 204-S-4 tank was used to hold the 100-N Reactor and 300 Area wastes. Tank 4 was connected to the 240-S-151 Diversion Box so that waste could be transferred to tank farms. Substantial dose rates were associated with these shipments. Several feet of sludge built up in the bottom of tank 4 and increased the dose rate problem. Increasing dose rate issues and contamination spreads lead to the construction of an enclosed unloading facility in 200 East Area (204-AR) that opened in 1981 and replaced this outdoor unloading station at REDOX.

Related Site Structure: The site is associated with the 203-S & 205-S UNH Processing Facilities, the REDOX UNH Unloading Facility and UPR-200-W-32, UPR-200-83, UPR-200-W-10, UPR-200-W-69, UPR-200-W-86, UPR-200-W-116 and UPR-200-W-123.

Site Posting: URM

Release Mechanism: Leak/ Spill

Release Type: Liquid

Dimensions (estimated):

Site Length: 84.0 m (276.0 ft)

Site Width: 68.0 m (223.0 ft)

Site Area: 5712.0 m² (61548.0 ft²)

Site Depth: 3.0 m (10.0 ft)

Cover Thickness: 0.6 m (2 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Uranium isotopes and unk others. A maximum of 10,000 counts per minute at 25 centimeters (1 inch) was found in this area in 1952.
Nonradiological	X	Uranium metal and unk others

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$1,850,000

References:

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

200-W-3

No Image Available

Site Name: 200-W-3, 2713-W North Parking Lot, 220-W-1**Site Type:** Dumping Area**Current OU:** 200-MG-1**Facility:** T Plant Area**Former OU:** 200-SW-1**Waste Site Description:**

The unit is a parking lot, containing an area with discolored soil approximately 10 to 15 cm (4 to 6 in.) deep. The 2713-W building had been a gas station and also contained an oil changing pit for government vehicle maintenance. Oil was often used on gravel areas for dust abatement. Two soil samples were collected in 1989 indicate that PCBs (maximum 3 ppm), lead (maximum 2.1 mg/L EP-TOX), xylene (maximum 1640 ppb), and total petroleum hydrocarbons (maximum 620 mg/kg) were present.

Related Site Structure: The site is associated with the 291-S Stack.**Site Posting:** Not Specified**Release Mechanism:** Unknown**Release Type:** Liquid**Dimensions (estimated):****Site Length:** 91.0 m (300.0 ft)**Site Width:** 152.0 m (500.0 ft)**Site Area:** 13832.0 m² (150000.0 ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** 0 m (0 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	None	None
Nonradiological	X	PCB's, lead, xylene, and petroleum hydrocarbons

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$728,000**References:**

WIDS General Summary Report, DOE/RL-2004-60

200-W-33

Site Name: 200-W-33, Solid Waste Dumping Area, Debris near 609 gate

Site Type: Dumping Area

Current OU: 200-MG-1

Facility: WM Area

Former OU: 200-SW-1

Waste Site Description:

The site consists of an area of debris covering approximately one acre in a stand of open sagebrush. In April 1996, a large amount of rusted cans, rusted 55 gal drums, steel containers, wood and other debris was found in this area. Some evidence of burning and oil spills were also noted.

Related Site Structure: None

Site Posting: Not Specified

Release Mechanism: Dumping Area

Release Type: Solid and Liquid (?)

Dimensions (estimated):

Site Length: 245.0 m (804.0 ft)

Site Width: 215.0 m (705.0 ft)

Site Area: 52675.0 m² (566820.0 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	None	None
Nonradiological	X	Oil substance, burn residue

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$597,000

References:

WIDS General Summary Report, DOE/RL-2004-60

200-W-51

No Image Available

Site Name: 200-W-51, Septic Tank (Abandoned)**Site Type:** Septic System**Current OU:** 200-MG-1**Facility:** S/U Farm Area**Former OU:** 200-ST-1**Waste Site Description:**

The site is an abandoned septic tank that has been filled and covered. The septic tank was discovered during excavations (for exhauster upgrades) outside 241-SY Tank Farm. The tank is not marked or posted. The Engineering Change Notice (ECN-637974) referenced below identifies the location of an abandoned septic tank found during the construction activities associated with the new SY Exhauster. Work package 2W-94-1004 WCN #4 (listed in references) describes the activities associated with filling and covering the abandoned tank. The tank is not shown on any known drawings. The Engineering Change Notice requested drawing H-2-44511, sheets 46 and 54 be updated to show the presence of this abandoned septic tank. A released copy of the ECN will be coming to the WIDS Team. The site should then be closed.

Related Site Structure: None**Site Posting:** None**Release Mechanism:** Sanitary Effluent**Release Type:** Liquid**Tank:****Dimensions (estimated):****Site Length:** Unknown m (Unknown ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** Unknown m (Unknown ft)**Cover Thickness:** None m (None ft)**Site Area:** Unknown m² (Unknown ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Tile Field:**Dimensions (estimated):****Site Length:** Unknown m (Unknown ft)**Site Width:** Unknown m (Unknown ft)**Site Area:** Unknown m² (Unknown ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** Not Specified m (Not Specified ft)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$289,000**References:**

WIDS General Summary Report, DOE/RL-2002-14

200-W-53**No Image Available**

Site Name: 200-W-53, UPR-200-W-166, UN-216-W-31
Site Type: Unplanned Release
Current OU: 200-MG-1

Facility: T Farm Area
Former OU: 200-UR-1

Waste Site Description:

This site was an area of surface soil contamination located east of the 207-T Retention Basins. Identified in 1994 with result of approximately 155,706 sq. ft of land being marked/posted as a SCA. The contaminated soil was scraped and placed inside the 207-T Retention Basin. The Tank Waste Remediation Group used the waste site number UN-216-W-31 (alias UPR-200-W-166) to document their 1996 clean up effort. However, this contaminated soil was not located at the same place as the original UN-216-W-31 that was consolidated/stabilized by RARA in 1992. The original UN-216-W-31 area of contamination was described as located north and east of 241-T Tank Farms. In 1996, the UN-216-W-31 number was used again for the contamination found further east. The second area of contamination was given a separate site code (200-W-53) to explain the two separate remediation activities. The Tank Waste Remediation Group used the waste site number UN-216-W-31 (alias UPR-200-W-166) to document their 1996 clean up effort. However, this contaminated soil was not located at the same place as the original UN-216-W-31 that was consolidated and stabilized by the Radiation Area Remedial Action (RARA) in 1992. The original UN-216-W-31 area of contamination was described as being located north and east of 241-T Tank Farms. In 1996, the UN-216-W-31 number was used again for the contamination found further east, because the source of the contamination was assumed to be the same as the source for UN-216-W-31. Due to programmatic responsibility issues, it was necessary to give the second area of contamination a separate site code (200-W-53) to explain the two separate remediation activities.

Related Site Structure: The site is associated with the 207-T Basin.

Site Posting: URM

Release Mechanism: Windblown Particulate

Release Type: Solid

Dimensions (estimated):

Site Length:	120.0 m (393.7 ft)	Site Depth:	Unknown m (Unknown ft)
Site Width:	120.0 m (393.7 ft)	Cover Thickness:	Unknown m (Unknown ft)
Site Area:	14400.0 m ² (155015.4 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	None	None

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$309,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-54**No Image Available****Site Name:** 200-W-54, Contamination Migration from 241-SX Tank Farm**Site Type:** Unplanned Release**Current OU:** 200-MG-1**Facility:** S/U Farm Area/ REDOX Area**Former OU:** 200-UR-1**Waste Site Description:**

This site is an expanding area of contamination migration. The original UPR was defined in 1997 as a large, irregular shaped SCA located on the east side of 241-S/SX Tank Farms. In 1997, it measured approximately 175 m (575 ft) by 100 m (330 ft). Another GPS was done in 1998 by Bruce Markes. The posted SCA had been extended approximately 50 m (165 ft) to the west (up to the tank farm fence) and approximately 200 m (660 ft) in the north-south direction. A site visit in 08/00 found multiple additional radiologically chained and posted areas in this vicinity. In 09/00, 10/00, and 11/00, the ISVAC group submitted several individual radiologically posted areas in the vicinity of the originally defined area to WIDS as Discovery sites. All the radiologically posted areas north and east of the tank farm fence are incorporated into the 200-W-54 waste site description. In September, October and November 2000, the Dyncorp ISVAC group submitted several individual radiologically posted areas in the vicinity of the originally defined area to WIDS as Discovery sites. All of the contamination in this area is assumed to be the result of tank farm activities or contamination migration from the adjacent posted contamination areas because they are the only apparent contamination sources. All the radiologically posted areas north and east of the tank farm fence are incorporated into the 200-W-54 waste site description. In 2002, 200-W-54 was consolidated with the 241-S, SX, SY Soil Site (200-W-96), but because of the increasing size of 200-W-54, it was un-consolidated from 200-W-96 in December 2004.

Related Site Structure: The site is associated with activity in the 241-S, SX and SY Tank Farms. There is also one separately posted CA located north of 241-SY Tank Farm, across a gravel road. In 2002, 200-W-54 was consolidated with the 241-S, SX, SY Soil Site (200-W-96), but because of the increasing size of 200-W-54, it was unconsolidated from 200-W-96 in 12/04.

Site Posting: SCA**Release Mechanism:** Windblown Particulate**Release Type:** Solid**Dimensions (estimated):**

Site Length: 175.0 m (574.2 ft)
Site Width: 100.6 m (330.0 ft)
Site Area: 17601.5 m² (189469.5 ft²)

Site Depth: Unknown m (Unknown ft)
Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Contamination migration from S/SX Tank Farm; 650 - 20000 cpm survey in November 1998.
Nonradiological	None	None

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$2,210,000**References:**

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-55**Site Name:** 200-W-55, Dumping Area North of 231-Z**Site Type:** Dumping Area**Current OU:** 200-MG-1**Facility:** T Farm Area**Former OU:** 200-SW-1**Waste Site Description:**

The site consists of scattered debris approximately 10 feet in diameter inside the north end of a large depression. The site is not marked or radiologically posted. An area of debris was identified during a 1997 RCRA Permit General Inspection tour. The debris consists of concrete rubble, wood, cans, pipes and rusted sheet metal.

Related Site Structure: None**Site Posting:** None**Release Mechanism:** Dumping Area**Release Type:** Solid**Dimensions (estimated):****Site Length:** None m (None ft)**Site Width:** 3.0 m (10.0 ft)**Site Area:** 2790.0 m² (30031.0 ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** 0 m (0 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	None	None
Nonradiological	X	Unknown

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$122,000**References:**

WIDS General Summary Report, DOE/RL-2004-60

200-W-6

No Image Available

No Image Available

Site Name: 200-W-6, 200-W Painter Shop paint solvent disposal area**Site Type:** Dumping Area**Facility:** T Plant Area**Current OU:** 200-MG-1**Former OU:** 200-SW-1**Waste Site Description:**

The site consists of contaminated soil. The soil was identified in 1993, while performing building modifications at the paint shop. The construction forces shop complex has been situated at this location for many years. Building modifications being done in 1993 required a portion of the concrete floor be removed. The soil beneath the floor was being excavated by hand (11/17/93) when a strong solvent odor was noticed. When the odor was discovered, the job was stopped. The soil was placed back into the excavation and reported to the construction supervisor. Long time employees indicate that prior to 1984, it had been a common practice to dispose of paint and solvents directly to the ground. A Suspect Waste Site Information Report was submitted to the monitoring group on November 23, 1993. The site was submitted to the WIDS database in January 1994.

Related Site Structure: None**Site Posting:** Not Specified**Release Mechanism:** Liquid Disposal**Release Type:** Liquid**Dimensions (estimated):**

Site Length:	Irregular m (Irregular ft)	Site Depth:	Unknown m (Unknown ft)
Site Width:	Irregular m (Irregular ft)	Cover Thickness:	0 m (0 ft)
Site Area:	273.9 m ² (2948.3 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	None	None
Nonradiological	X	Paint solvents

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$795,000**References:**

WIDS General Summary Report, DOE/RL-2004-60

200-W-63

No Image Available

Site Name: 200-W-63, Contaminated Concrete Pad**Site Type:** Unplanned Release**Current OU:** 200-MG-1**Facility:** T Farm Area**Former OU:** 200-UR-1**Waste Site Description:**

The site was a "T" shaped concrete pad that had been posted with Surface CA signs. In 12/97, the pad was found posted with an old, faded "Surface Contamination Area" sign and rusted chain. It did not appear that anyone was responsible for surveillance and maintenance of this site. In the 1980s radiological contaminated equipment was stored on pad. Coyote tracks indicated the coyotes were drinking water from a low spot in the concrete. A 12/5/97 radiological survey confirmed the presence of both beta/gamma and alpha contamination. A site visit in 09/99 found the pad had been covered with gravel and reposted as URM. Employees who have worked in 200 West Area state the pad was used to store radiologically contaminated tanks in the late 1980's. The tanks were removed in 1991 and the pad was left posted as a Surface Contamination Area. In December of 1997, the pad was found posted with an old, faded "Surface Contamination Area" sign and rusted chain. It did not appear that anyone was responsible for surveillance and maintenance of this site. Dave Phipps, Fluor Daniel Hanford Radiological Control Group, was unable to identify a group that would claim responsibility for the contaminated pad. He also observed evidence of coyote tracks that indicated the coyotes were drinking water from a low spot in the concrete. A radiological survey done on December 5, 1997 confirmed the presence of both beta/gamma and alpha contamination.

Related Site Structure: None**Site Posting:** URM**Release Mechanism:** Contaminated Foundation**Release Type:** Liquid**Dimensions (estimated):****Site Length:** 42.7 m (140.0 ft)**Site Width:** 13.7 m (45.0 ft)**Site Area:** 585.3 m² (6300.6 ft²)**Site Depth:** Unknown m (Unknown ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	X	5000 - 300000 dpm beta/gamma and 3000 - 7000 alpha surveyed on December 5, 1997.
Nonradiological	None	None

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$317,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-64

Site Name: 200-W-64, 2724-W Contaminated Laundry Facility Building Foundation

Site Type: Foundation

Current OU: 200-MG-1

Facility: T Plant Area

Former OU: 200-UR-1

Waste Site Description:

The building foundation is posted with "Underground Radioactive Material" signs. There is also an area approximately 3 m (10 ft) by 4.5 m (15 ft) on the north side of the foundation that is posted as "Fixed Contamination". Several drains and pipes were observed on the concrete pad. All drains and pipes were either capped or grouted. There are three radiologically posted manholes adjacent to the northwest corner of the foundation. The manholes are likely to be a portion of the process sewer. Six connex storage units and several equipment items such as pipe, valves, flanges, fence posts were observed on the southeastern portion of the pad. DOE/RL-2004-39 Rev 0 states: Contamination is part of remaining portion of building foundation. Extent of contamination in cracks is unknown. WHC-EP-0342 states the 2724-W building was built in 1952 and expanded several times. ARH-2155, however, indicates that the new laundry facility (2724-W) began discharging effluent in 1950. This building (2724-W) replaced the 2723-W "Old Laundry" facility which was then used as the mask washing facility. The laundry effluent was discharged via an underground pipeline (200-W-102) to the 216-U-14 Ditch, until it was diverted to the new Laundry Waste Crib (216-W-LWC) in 1981. By 1981, the Laundry Complex included the 2724-W, 2724-WA, 2724-WB and MO-406. MO-412 was placed adjacent to the Laundry Complex in 1984 and housed the Mask Cleaning and Maintenance Facility. Soiled protective work clothing (coveralls, gloves, hoods, canvas boots and rubber shoe covers) were sent to the laundry facility from all the Hanford work areas. Two thirds of the laundry received was radioactively contaminated. One third consisted of "blue" (non contaminated) coveralls and towels. The non-contaminated laundry was washed separately from the contaminated laundry. By 1981, approximately three million pounds of laundry was processed per year in 600 lbs capacity washing machines and 400 lbs capacity dryers. An average of 26,250,000 L (691,000 gal) of waste water was discharged to the 216-W-LWC crib each month. A Facilities Evaluation Board assessment, done in July 1998, documented a finding that the fixative coating on the Fixed Contamination Area of the pad has degraded. The area has broken into removable pieces. There is a concern that the cracked concrete could cause a loss of contamination control. There have been problems identifying a responsible company and organization to respond to the finding.

Related Site Structure: The site is associated with the demolished contaminated laundry facility complex which included 2724-WA, 2724 WB Laundry facilities, and the MO-412 Mask Cleaning facility. It replaced the 2723 -W (Old Laundry" Facility and mask cleaning station) which was located northeast of the 2724-W facility. Effluent was discharged via 200-W-102 to the U-14 Ditch until 1981 when it was diverted to the 216-W-LWC (Laundry Waste Crib).

Site Posting: URM/Fixed Contamination

Release Mechanism: Contaminated Foundation

Release Type: Liquid

Dimensions (estimated):

Site Length: 42.0 m (138.0 ft)

Site Width: 32.0 m (105.0 ft)

Site Area: 1344.0 m² (14490.0 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Radiological contamination from soiled protective work clothing; There was 9000 dpm beta/gamma found in the Fixed Contamination Area in March 1998.
Nonradiological	None	None

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$871,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-67

No Image Available

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Site Name: 200-W-67, Contaminated Soil at the Corner of Cooper and 16th Street**Site Type:** Unplanned Release**Facility:** S/U Farm Area**Current OU:** 200-MG-1**Former OU:** 200-UR-1**Waste Site Description:**

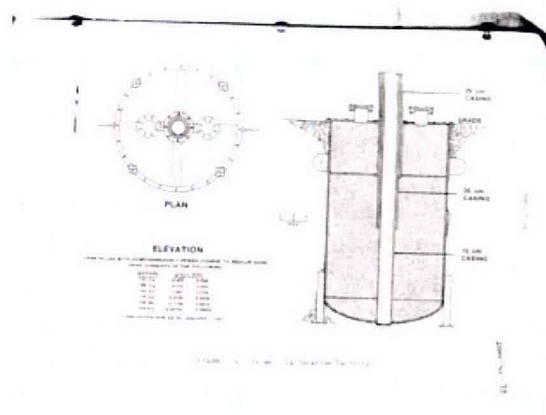
The site is currently posted as a URM area. A 4/98 radiological survey identified contamination specks and a contaminated ant hill near the intersection of 16th St. and Cooper Ave. with a maximum reading on the specks of 11 mr/hr. Another speck was found that read 6 mr/hr. Other contamination levels ranged from 500 cpm to 70,000 cpm. The ant hill read 3000 cpm. Some of the contamination was removed as it was found. The rest of the area was posted as a CA in 04/98. The Soil CA was posted in 1998. Even though some Radiation Surveys and Stabilization Reports identified the area surveyed and stabilized as UPR-200-W-24, the contaminated area south of 16th St has been given a new WIDS number (200-W-67).

Related Site Structure: None**Site Posting:** URM**Release Mechanism:** Biological Intrusion/ Animal Feces; Windblown Particulates**Release Type:** Solid**Dimensions (estimated):****Site Length:** 100.0 m (328.1 ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** 18.0 m (59.1 ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)**Site Area:** 1800.0 m² (19376.9 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Contamination specks and a contaminated ant hill near the intersection of 16th St. and Cooper Ave with a maximum reading on the specks of 11 mr/hr; another speck was found that read 6 mr/hr; other contamination levels ranged from 500 cpm to 70,000 cpm; the ant hill read 3000 cpm, all in April 1998.
Nonradiological	None	None

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$287,000**References:**

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-75

No Image Available

Site Name: 200-W-75, Radiological Logging System (RLS) Calibration Silos

Site Type: Experiment/Test Site

Current OU: 200-MG-1

Facility: REDOX Area

Former OU: 200-SW-2

Waste Site Description:

Three calibration silos are located west of the 202-S building, south of the 276-S building and north of the 211-S tanks. One calibration silo is located west of the 211-S tanks, across an asphalt access road. The site consists of four underground RLS equipment calibration silos. The silos are galvanized steel containers with metal lids bolted on top. The silos have somewhat different design constructions for calibrating different types of equipment. One type consisted of a 25 cm (6 in.) capped well casing inserted through the centers of the silos. There are two risers with bolted lids adjacent to the well casing. The silos are posted with URM signs. The calibration silos contained radioactive sources consisting of known quantities of cobalt-60, strontium-90, ruthenium-106 and cerium-144 in sealed capsules. Since the silo covers are posted with URM signs, it is assumed the sources are still inside the silos. In the late 1970's, test well mockups were used to calibrate in-well radionuclide detectors. The calibration mockups were constructed of a steel container approximately 2.4 m (8 ft) deep filled with soil. Tubes containing radioactive sources were inserted into the soil at distances of 2.5, 7.6, 15, 30, 46 and 61 cm from the well casing that was located in the center of the mockup. The mockup silo was buried so that a RLS vehicle could drive up to the calibration silo and drop its logging probe into the center well casing.

Related Site Structure: None

Site Posting: URM

Release Mechanism: Contaminated Calibration Silos

Release Type: Solid

Dimensions (estimated):

Site Length:	None m (None ft)	Site Depth:	2.4 m (8.0 ft)
Site Width:	1.2 m (4.0 ft)	Cover Thickness:	0.015 m (0.05 ft)
Site Area:	12.0 m ² (128.0 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Cobalt-60, Strontium-90, Ruthenium-106, Cerium-144
Nonradiological	None	None

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$358,000

References:

WIDS General Summary Report, DOE/RL-2004-60

200-W-80

Site Name: 200-W-80; Mound of Contaminated Soil Southwest of T Plant

Site Type: Spoils Pile/Berm

Current OU: 200-MG-1

Facility: T Plant Area

Former OU: 200-UR-1

Waste Site Description:

The site is a gravel area surrounded with post and chain and URM signs (formerly a 1.5 m (5 ft) high, 8.2 m (27 ft) long, and 3 m (10 ft) wide mound of soil surrounded with radiation rope and posted CA signs). The mound and surrounding area contained many pieces of asphalt, similar to that in the adjacent T Plant parking lot. The mound and surrounding area is covered by a thin growth of cheatgrass/tumbleweeds. About 3 m (10 ft) east of the site is a small posted URM with one capped well inside the posted area and one just outside (locked with a warning of potential contamination). Across the north part of the contamination area are fence posts marking an underground pipeline, traveling east-west, posted as a URM. Another posted underground pipeline goes under the mound of soil, in a N-S direction, and is also posted as a URM. The Soil Contamination Area was posted in 1998. At the time the contamination was identified, it was believed to be part of UPR-200-W-24. UPR-200-W-24 occurred inside 241-U Tank Farm in 1953. It is not possible to positively link the contaminated soil found outside the 241-U Tank Farm in 1998 with a release that occurred 45 years previously. Even though some Radiation Surveys and Stabilization Reports identified the area surveyed and stabilized as UPR-200-W-24, the contaminated area south of 16th Street has been given a new WIDS number (200-W-67). In May 2000, the Dyncorp ISVAC group submitted the mound of soil with Contamination Area postings to WIDS as a Discovery Site. Their group performed a radiological survey of the area in 1999. No contamination was identified on the surface of the mound at that time. It is possible that the mound was created during a parking lot expansion at T Plant that occurred several years ago. The presence of asphalt in and surrounding the mound supports this idea.

Related Site Structure: None

Site Posting: URM

Release Mechanism: Soil Contamination

Release Type: Solid

Dimensions (estimated):

Site Length: 15.0 m (49.2 ft)

Site Width: 14.0 m (46.0 ft)

Site Area: 210.0 m² (2263.9 ft²)

Site Depth: 1.5 m (4.9 ft)

Cover Thickness: 0.3-0.6 m (1-2 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	None	None

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$279,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-81

Site Name: 200-W-81; Contaminated Tumbleweed Fragments Along Railroad Track East of 218-W-3AE

Site Type: Unplanned Release

Current OU: 200-MG-1

Facility: WM Area

Former OU: 200-UR-1

Waste Site Description:

The site is three posted Contamination Areas on the railroad track east of the burial ground, south of the 610 Gate of the 200 West Area fence. ISVAC submitted the 3 posted areas to WIDS as a Discovery Site. ISVAC states the CAs contain blown in tumbleweeds and tumbleweed fragments. An 8/15/97 Off Normal Occurrence Report (references Survey Report SW-242127) states that Solid Waste Management technicians were performing a routine radiation survey inside the burial ground and identified contaminated vegetation with contamination levels of 7,000 dpm. After removing the contaminated vegetation, a recheck of the dirt found beta/gamma readings of 70,000 dpm. The burial ground operators sprayed the area with soil cement and posted it as a CA. The Dyncorp ISVAC group submitted the three posted areas to WIDS as a Discovery Site. They state the CAs contain blown in tumbleweeds and tumbleweed fragments. A The Occurrence Report references Survey Report SW-242127. The windblown contaminated tumbleweeds are likely coming from the south end of 218-W-3AE.

Related Site Structure: The windblown contaminated tumbleweeds are likely coming from the south end of 218-W-3AE.

Site Posting: CA

Release Mechanism: Vegetation (tumbleweeds)

Release Type: Solid

Dimensions (estimated):

Site Length:	30.5 m (100.0 ft)	Site Depth:	Unknown m (Unknown ft)
Site Width:	12.2 m (40.0 ft)	Cover Thickness:	0 m (0 ft)
Site Area:	371.6 m ² (4000.4 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	70,000 dpm beta/gamma on August 15, 1997
Nonradiological	None	None

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$2,084,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-82

Site Name: 200-W-82, Risers East of 216-TY-201 and 216-T-26, 216-T-27, and 216-T-28 Cribs, Crib Unloading Station

Site Type: Pump Station/Product Piping

Current OU: 200-MG-1

Facility: T Farm Area

Former OU: 200-LW-1

Waste Site Description:

The site consists of two concrete pads with flanged risers, surrounded by CA postings. Based on the available information, it is believed that this site is a liquid waste truck unloading station. It is assumed that the short pipeline, shown on drawing H-2-2733, extended eastward to the risers. The unloading station was built to accommodate tanker trucks unloading 300 Area liquid wastes into the 216-T-27 and 216-T-28 cribs. The unloading station jetted waste from the trucks to the cribs and was capable of unloading two trucks at a time. The cement pads with risers are located just east of a blanked pipeline (shown on drawing H-2-2733). The blanked pipe extended westward to the 216-T-26, 216-T-27, and 216-T-28 crib line (see 200-W-188-PL) at a point just south of the 216-TY-201 Flush Tank. From the drawing, it appears the pipe "T" was originally designed to allow the construction of three additional cribs to receive wastes from the 216-TY-201 Flush Tank. However, the additional cribs were never built. Sketch SK-2-3706 shows plans for a truck unloading station at the 216-T-34 crib. A note on the drawing says "relocate hose connections & support from existing truck unloading station 200W". Since the 300 Area liquid waste that had been going to the 216-T-28 crib was "rerouted" to the 216-T-34 crib (Lundgren 1971), the existing truck unloading station mentioned on the drawing is assumed to be this site. The visible riser configuration east of 216-TY-201 matches the design on Sketch SK-2-3706. Both the design sketch and the site east of 216-TY-201 have two small concrete pads with a metal pipe flange rising approximately 7 cm (3 in) above the level of the concrete. The document "Radioactive Liquid Waste Disposal Facilities-200 West Area" (Lundgren 1971) states that 300 Area wastes (from the 340 Waste Transfer Facility) were discharged to the 216-T-28 Crib. According to "Tank Wastes Discharged Directly to the Soil at the Hanford Site" (Waite 1991), the waste from the 340 Waste Transfer Facility was combined with T Plant and 2706-T waste and discharged to the 216-T-28 crib via the single-shell tanks, indicating the 300 Area waste was added to the tank farm tanks. This appears to be inaccurate based on drawings, the presence of the structure east of the cribs, and contradictory statements in the T Plant Source Aggregate Area Management Study Report (DOE/RL-91-61).

Related Site Structure: The site is associated with the 216-T-27 and 216-T-28 Cribs. The pipeline associated with the unloading station is described in 200-W-188-PL.

Site Posting: CA

Release Mechanism: Contaminated Foundation

Release Type: Solid and Liquid

Dimensions (estimated):**Site Length:** 12.0 m (40.0 ft)**Site Width:** 6.0 m (20.0 ft)**Site Area:** 72.0 m² (800.0 ft²)**Site Depth:** 1.5 m (5.0 ft)**Cover Thickness:** 0 m (0 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$428,000**References:**

WIDS General Summary Report, DOE/RL-2001-66, DOE/RL-2006-56, DOE/RL-2005-61

200-W-83

Site Name: 200-W-83, Contamination Area North of 2727W

Site Type: Unplanned Release

Current OU: 200-MG-1

Facility: T Plant Area

Former OU: 200-UR-1

Waste Site Description:

The site had been a posted CA extending across the railroad track north of the 2727-W Sodium Storage building. In April 2007, the contamination was backfilled with clean dirt and the area posting was changed to URM. The railroad tracks are no longer used.

Related Site Structure: 2727-W Building,

Site Posting: URM

Release Mechanism: Unknown

Release Type: None

Dimensions (estimated):

Site Length: 18.3 m (60.0 ft)

Site Width: 7.6 m (25.0 ft)

Site Area: 139.4 m² (1500.0 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: Unknown m (Unknown ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$2,775,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-86

Site Name: 200-W-86, Contamination Area Around Light Pole

Site Type: Unplanned Release

Current OU: 200-MG-1

Facility: T Plant Area

Former OU: 200-UR-1

Waste Site Description:

The site was originally a small, graveled Soil CA around an active (in use) light pole, near the intersection of the U plant railroad spur and Bridgeport Ave. The Dyncorp ISVAC group submitted this site to WIDS as a Discovery Site in 2000. No radiological survey could be found to determine when the power pole was posted, the radiological conditions inside the posting, or the source of the contamination.

Related Site Structure: The light pole is related to the electrical utility facilities.

Site Posting: URM

Release Mechanism: Unknown

Release Type: Solid, Liquid, ?

Dimensions (estimated):

Site Length: 3.0 m (10.0 ft)

Site Depth: Unknown m (Unknown ft)

Site Width: 3.0 m (10.0 ft)

Cover Thickness: 0.3-0.6 m (1-2 ft)

Site Area: 9.3 m² (100.0 ft²)

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	None	None

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$106,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-90

Site Name: 200-W-90, Underground Radioactive Material Areas posted along 23rd Street in 200 West Area

Site Type: Unplanned Release

Facility: T Farm Area

Current OU: 200-MG-1

Former OU: 200-UR-1

Waste Site Description:

The site is comprised of three posted URM areas. Two are located on the south side of 23rd St, across from the 218-W-2A Burial Ground. One is located further east, on the south side of 23rd Street, across from the 241-T Tank Farm. The Dyncorp Integrated Soil, Vegetation and Animal Control group submitted these posted areas to WIDS as a Discovery Site in 2000. They are similar in size. No radiological survey could be found to describe the radiological conditions inside the posted areas or when they were posted. There is no underground pipeline in this area. There is no vegetation growing inside any of the three posted areas.

Related Site Structure: It is possible the areas are related to UPR-200-W-63.

Site Posting: URM

Release Mechanism: Unknown

Release Type: Solid, Liquid, ?

Dimensions (estimated):

Site Length: 6.1 m (20.0 ft)

Site Depth: Unknown m (Unknown ft)

Site Width: 3.0 m (10.0 ft)

Cover Thickness: 0 m (0 ft)

Site Area: 18.6 m² (200.0 ft²)

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	None	None

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$106,000

References:

WIDS General Summary Report, DOE/RL-2006-50, DOE/RL-2004-39

200-W-92

Site Name: 200-W-92, Contaminated Mound of Soil and Debris, Soil Mound West of 241-TY Tank Farm

Site Type: Dumping Area

Current OU: 200-MG-1

Facility: T Farm Area

Former OU: 200-SW-2

Waste Site Description:

The waste site is a mound of soil approximately 1.5 m (5 ft) high. It had been surrounded with chain and posted with CA signs. Several radiation flags were placed in the mound to identify significant contamination. Rocks, asphalt and chunks of cement were visible. Some vegetation, including rabbitbrush, had been growing on the mound. In April 2007, clean gravel was placed on top of the contamination and the site was down posted to URM. The Dyncorp ISVAC group submitted this as a Discovery Site. Radiological Problem Report SS-01-045 states that maximum contamination levels of 1,600,000 dpm per 100 sq cm of beta gamma and 14,000 dpm per 100 sq cm of alpha were found on the soil and debris. The soil pile appears to have been dumped at this location several years ago.

Related Site Structure: None

Site Posting: URM

Release Mechanism: Dumping Area

Release Type: Solid

Dimensions (estimated):

Site Length: 24.0 m (80.0 ft)

Site Width: 9.1 m (30.0 ft)

Site Area: 219.5 m² (2400.1 ft²)

Site Depth: Unknown m (Unknown ft)

Cover Thickness: 0.3-0.6 m (1-2 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Misc. Trash and debris with maximum readings of 1,600,000 disintegrations per 100 sq. cm of beta gamma and 14,000 disintegrations per 100 sq. cm of alpha in May 2001.
Nonradiological	X	Misc. Trash and debris

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$633,000

References:

WIDS General Summary Report, DOE/RL-2004-60

207-B

Site Name: 207-B, B Plant Retention Basin, 207-B Retention Basin

Site Type: Retention Basin

Current OU: 200-MG-1

Facility: Solid Waste Area

Former OU: 200-CW-1

Waste Site Description:

The unit is a concrete-lined basin, divided into two equal sized sections. The basin is surrounded by a 2.4 meter (8 foot) chain link fence and posted with Contamination Area signs. The retention basins served as settling basins, receiving B Plant process sewer effluent through an underground pipeline prior to being discharged to the 216-B-2-1, 216-B-2-2, 216-B-2-3 ditches. It was possible to divert effluent to the 216-B-63 ditch. The 216-B-2-1, 216-B-2-2 and 216-B-2-3 ditches were connected to the 216-B-3 ditches and ponds. The concrete walls of this unit have been contaminated by a number of incidents over the years involving excessive radioactive effluent releases. In 1953, the residue contamination in the walls was covered with a coat of tar sealant. In December 1999, contaminated tumbleweeds were found growing outside the northeast corner of the fenced basin. The contaminated area measured approximately 6 meters by 6 meters (20 feet by 20 feet) and was posted as a Soil contamination Area (SCA). The maximum contamination reading recorded was 480,000 disintegrations per minute of beta/gamma contamination. The area was backfilled with clean soil and reposted as Underground Radioactive Material (URM).

Related Site Structure: The basin has an inlet structure on the west and an outlet structure on the east side. There are two 0.9 m² (3 ft²) sumps, one for each basin section. The basin is also associated with UPR-200-E-32. The 200-E-112-PL pipeline connects to the west side of the retention basin. The valve box on the east side of the retention basin tied into the pipeline that fed the 216-B-63 Ditch (site code 216-E-191-PL). The B Plant Chemical Sewer pipeline (200-E-188-PL), the pipeline to the 216-B-2-1 and 216-B-2-2 ditches (200-E-204-PL) and the pipeline to the 216-B-2-3 ditch (200-E-205-PL) are connected to the valve pit located east of the valve box. The pipeline from 242-B to the basin is site code 200-E-264-PL. The cooling water pipeline from 241-BY tank farm to the basin is 200-E-265-PL. In 1987, the entire 216-B-2 ditch system was replaced with a single pipeline (200-E-126-PL) that connected the 207-B retention basin to the 216-B-3 ditch and pond system.

Site Posting: SCA, URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length: 75.0 m (246.0 ft)

Site Width: 37.5 m (123.0 ft)

Site Area: 2812.5 m² (30258.0 ft²)

Site Depth: 2.0 m (6.6 ft)

Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Cs-137, Sr-90, U-238, Tc-99. The maximum contamination reading recorded was 480,000 dpm of beta/gamma contamination in December 1999.
Nonradiological	X	As, Cd, Pb, Hg, Se, PCB Arochlor 1254

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$2,523,000**References:**

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

207-SL

No Image Available

Site Name: 207-SL, 222-S Retention Basin, REDOX Lab Retention Basin, 207-SL Retention Basin**Site Type:** Retention Basin**Facility:** REDOX Area**Current OU:** 200-MG-1**Former OU:** 200-LW-2**Waste Site Description:**

The site consists of a large below ground basin that is divided into two 94,625 liter (25,000 gallon) holding basins. The below ground basins are constructed of reinforced concrete walls 30 to 41 centimeters (12 to 16 inches) thick, and the floor is 38 centimeters (15 inches) thick. The unit also consists of three above ground 75,700 liter (20,000 gallon) holding tanks, added in 1994 to support the TEFD system. Before 1955, the site received low-level radioactive waste and discharged it to the 216-S-19 Pond. From 1955 to 1995 the effluent was discharged to the 216-S-26 crib. After 1995, non-radioactive, non-hazardous liquid effluents from the 222-S Laboratory, the 222-SA Laboratory, the 219-S Operating Gallery sump, and the package boiler unit, flow into the below ground basins for retention prior to transfer to the Treated Effluent Disposal Facility (TEDF). The effluents can be transferred to and from the below ground basins to the above ground holding tanks to provide additional extended storage before transfer. The area is not roped off, but has signs warning of surface radiation contamination. The inlet/outlet structure is outside of the basins on the east side; gratings, ladders, etc., are on the outside of the basins on the west side.

Related Site Structure: The basin is associated with the 216-S-19 Pond, the 216-S-26 crib and the TEDF system.**Site Posting:** Surface radiation contamination**Release Mechanism:** Contaminated Effluent**Release Type:** Liquid**Dimensions (estimated):****Site Length:** 15.2 m (50.0 ft)**Site Depth:** Unknown m (Unknown ft)**Site Width:** 4.3 m (14.0 ft)**Cover Thickness:** 0 m (0 ft)**Site Area:** 231.0 m² (2500.0 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Site received low-level rad waste.
Nonradiological	Ventilation cooling water, and miscellaneous wastes from laboratory	Unknown

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$690,000

References:

WIDS General Summary Report, DOE/RL-2005-61

209-E-WS-3

No Image Available

Site Name: 209-E-WS-3, Critical Mass Laboratory Valve Pit and Hold Up Tank (209-E-TK-111), IMUST, Inactive Miscellaneous Underground Storage Tank (See Subsites)

Site Type: Valve Pit

Facility: Semi-Works Area

Current OU: 200-MG-1

Former OU: 200-PW-4

Waste Site Description:

The Valve Pit has a steel lid and is posted (as of March 2001) with Radioactive Material, Internally Contaminated Systems Located Within, and Confined Space, Dome Loading, Ignition Control and IMUST warning signs. A 189 liter (50 gallon) holding tank (209-E-TK-111) is located under the valve pit. The tank was used as a drain tank. The tank held the condensate prior to being released to the cribs. The tank was routinely sampled for plutonium content to determine that the contents were below crib discharge levels. Present contents of the tank are estimated to consist of residual water from condensate collection, containing only low levels of plutonium. After sampling, the contents was discharged to the 216-C-7 crib. The 216-C-7 crib was placed on standby in 1983.

Related Site Structure: There is a thin, cadmium-lined Hold-Up Tank, 209-E-TK-111, associated with and under the Valve Pit. The pipelines to the valve pit are described in site code 200-E-248-PL.

Site Posting: Radioactive Material, Internally Contaminated Systems Located Within, and Confined Space, Dome Loading, Ignition Control and IMUST warning signs.

Release Mechanism: Contaminated Condensate

Release Type: Liquid

Dimensions (estimated):

Site Length:	3.4 m (11.0 ft)	Site Depth:	2.7 m (9.0 ft)
Site Width:	1.5 m (5.0 ft)	Cover Thickness:	0 m (0 ft)
Site Area:	3.2 m ² (35.0 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Plutonium
Nonradiological	None	None

Preferred Removal Action: RTD

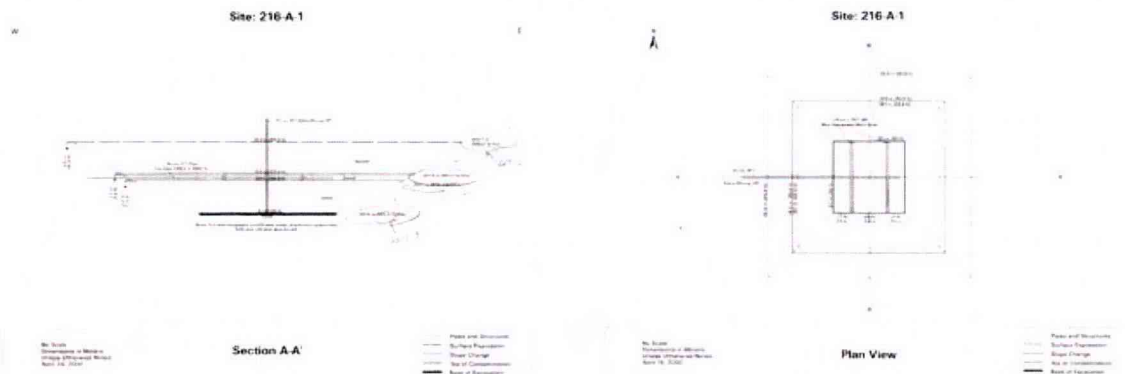
Estimated Removal Action Present Worth: \$316,000

References:

216-A-1

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-A-1



Site Name: 216-A-1, 216-A-1 Cavern, 216-A-1 Trench

Site Type: Crib

Current OU: 200-MG-1

Facility: 200 E Ponds Area

Former OU: 200-PW-2

Waste Site Description:

The 216-A-1 and 216-A-7 cribs are located within the same radiologically posted area. They are marked and posted with URM signs. The site received start up waste from PUREX during November and December 1955 via an over-ground pipeline. When the specific retention capacity was reached, the site was deactivated by removing the over-ground piping and backfilling. The site is composed of 15 cm (6 in.) perforated Vitriified Clay Pipe (VCP), 9.1 m (30 ft) long, running horizontally at 2.7 m (9 ft) below grade, with two 9.1 m (30 ft) lengths of 15 cm (6 in.) perforated VCP placed perpendicularly to the first length of pipe, forming an H pattern. There is approximately 1.8 m (6 ft) or 310 m³ (11,000 ft³) of coarse rock in the excavation bottom. The side slope, surface to 2.1 m (7 ft) deep, is 1:1.5, 2.1 m (7 ft) to site bottom is 1:2.

Related Site Structure: The site is associated with the 202-A sample pit #3 and the 200-E-158-PL Pipeline.

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length:	25.9 m (84.8 ft)	Site Depth:	4.6 m (15.0 ft)
Site Width:	25.9 m (84.8 ft)	Cover Thickness:	0.6 m (2 ft)
Site Area:	670.8 m ² (7191.0 ft ²)		

Potential Contaminants:

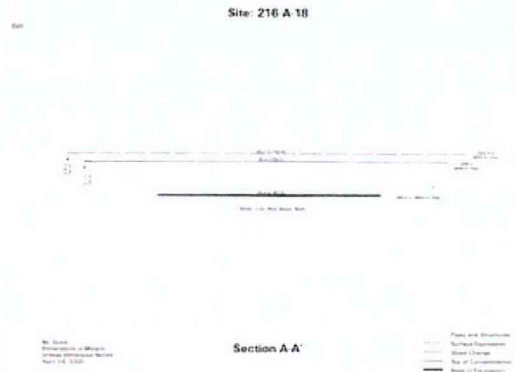
	Type	Constituents
Radiological	X	U-238
Nonradiological	X	As, Mn, U

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$180,000

References:

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-A-18

Site Name: 216-A-18, 216-A-18 Excavation, 216-A-18 Grave, 216-A-18 Sump, 216-A-18 Crib

Site Type: Trench

Facility: 200 E Ponds Area

Current OU: 200-MG-1

Former OU: 200-PW-2

Waste Site Description:

The site is marked and posted with URM signs. The trench received start up waste from PUREX via an aboveground pipeline. The site was an excavation with a side slope of 1:2. No crib structure was ever built. The site was deactivated by removing the overground piping and backfilling the excavation when the specific retention capacity was reached. The start date was November 1955. The trench was removed from service in December 1955. Some documents state the end date as January 1956.

Related Site Structure: The site is associated with the 202-A Facility.

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length: 24.4 m (80.0 ft)

Site Depth: 4.9 m (16.0 ft)

Site Width: 24.4 m (80.0 ft)

Cover Thickness: 0.3-0.6 m (1-2 ft)

Site Area: 595.4 m² (6400.0 ft²)

Potential Contaminants:

	Type	Constituents
Radiological	X	U-238
Nonradiological	X	As, Mn, U

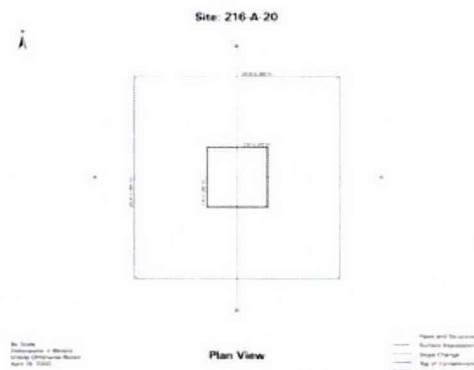
Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$180,000

References:

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-A-20



Site Name: 216-A-20, 216-A-20 Test Hole, 216-A-20 Grave, 216-A-20 Sump, 216-A-20 Crib

Site Type: Trench

Current OU: 200-MG-1

Facility: 200 E Ponds Area

Former OU: 200-PW-2

Waste Site Description:

The site is marked and posted with URM signs. 216-A-20 was originally a test hole excavated with a drag line and used for PUREX start-up waste. The site also received cooling water from the 241-A-431 building contact condenser via the 216-A-34 Ditch. The site was backfilled when the specific retention capacity was reached. The site was deactivated in 1955 by removing the overground piping and backfilling the excavation when the specific retention capacity was reached. The start date was November 1955 and the end date was December 1955.

Related Site Structure: The site is associated with the 241-A-431 building, 202-A, and the 216-A-34 Ditch.

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length: 7.6 m (25.0 ft)

Site Depth: 4.6 m (15.0 ft)

Site Width: 7.6 m (25.0 ft)

Cover Thickness: 0.3-0.6 m (1-2 ft)

Site Area: 57.8 m² (625.0 ft²)

Potential Contaminants:

	Type	Constituents
Radiological	X	U-238
Nonradiological	X	As, Mn, U

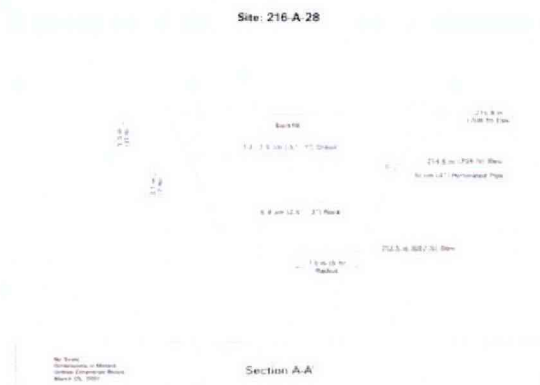
Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$180,000

References:

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-A-28



Site Name: 216-A-28, 216-A-28 French Drain, 216-A-28 Crib

Site Type: Crib

Current OU: 200-MG-1

Facility: PUREX Area

Former OU: 200-PW-2

Waste Site Description:

The site is not currently marked or posted. The 203-A tank farm was used for storage and shipping of uranyl nitrate hexahydrate (UNH) product and concentration of UNH waste. It consisted of 460,000 L (100,000 gal) stainless steel tanks for UNH storage and three smaller nitric acid tanks. The french drain received liquid waste from the 203-A sumps and heating coil condensate from the uranyl nitrate tanks. The effluent piping to the site was blanked off in November 1976 when the flow rate exceeded the infiltration capacity. The excavation had a 6 m (20 ft) diameter at grade and a 3 m (10 ft) bottom diameter, with a truncated cone shape. The excavation contained approximately 2.7 m (9 ft) of gravel fill and was backfilled to grade. The unit contained a 10 cm (4 in.) stainless steel 304 perforated pipe, 5.2 m (17 ft) long, extending horizontally 1.2 m (4 ft) below grade and a 5 cm (2 in) diameter, schedule 40, perforated stainless steel liquid level riser pipe, 4 m (13 ft) long. The site was activated in December 1958. The waste discharge from the 203-A Building to the 216-A-22 Crib was halted following Unplanned Release UPR-200-E-17. This waste stream was diverted to the 216-A-28 French Drain. In November 1967, the effluent flow rate to the french drain exceeded the infiltration capacity. The site was deactivated by blanking the effluent pipeline to the unit. The effluent was rerouted to the 216-A-3 Crib.

Related Site Structure: The site is associated with 216-A-22, 216-A-3 and the 200-E-159-PL pipeline.

Site Posting: None

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length:	None m (None ft)	Site Depth:	3.4 m (11.0 ft)
Site Width:	6.1 m (20.0 ft)	Cover Thickness:	0 m (0 ft)
Site Area:	29.2 m ² (314.2 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Uranium

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$405,000

References:

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-A-3

No Image Available

Site Name: 216-A-3, 216-A-3 Cavern, 216-A-3 Crib
Site Type: Crib
Current OU: 200-MG-1

Facility: PUREX Area
Former OU: 200-PW-2

Waste Site Description:

The start date was January 1956 and the end date was April 1981. After the crib was taken out of service, the waste stream was reworked through the uranium cycle. Low-level radioactive waste was sent to the 216-A-29 Ditch. The crib is marked and posted with Underground Radioactive Material signs. Received silica-gel regeneration waste and pumphouse drainage from 203-A and UNH storage pit. From 1956 to 1967, the site received silica-gel regeneration waste and pump house drainage from 203-A and drainage from the UNH storage pit. The silica gel discharge was discontinued in 1967. The site was taken out of service in April 1981. The waste was rerouted so that any low level radioactive waste was sent to the 216-A-29 Ditch. The unit contains a 10-centimeter (4-inch) Schedule 10 perforated 304 stainless steel pipe placed horizontally 2.4 meters (8 feet) below grade and two 6.1-meter (20-foot) lengths of this pipe placed perpendicularly to the first pipe, forming an H pattern. The site has approximately 2.4 meters (8 feet) of gravel fill with a volume of 280 cubic meters (10,000 cubic feet) and has been backfilled. The side slope surface to 2.1 meters (7 feet) deep is 1.5:1 and from 2.1 meters (7 feet) to the site bottom is 2:1.

Related Site Structure: The crib is associated with 203-A. The 216-A-3 pipeline is site code 200-E-168-PL.

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length:	21.8 m (71.5 ft)	Site Depth:	4.9 m (16.0 ft)
Site Width:	21.8 m (71.5 ft)	Cover Thickness:	0 m (0 ft)
Site Area:	475.2 m ² (5112.3 ft ²)		

Potential Contaminants:

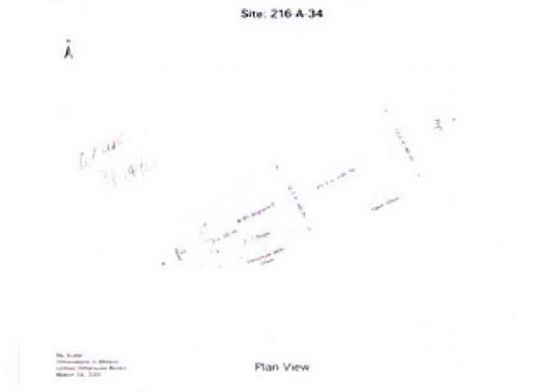
	Type	Constituents
Radiological	X	Cesium-137, Strontium-90, and Ruthenium-106
Nonradiological	X	UNH, uranium,

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$180,000

References:

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-A-34

Site Name: 216-A-34, 216-A-34 Ditch, 216-A-34 Crib
Site Type: Ditch
Current OU: 200-MG-1

Facility: 200 E Ponds Area
Former OU: 200-PW-4

Waste Site Description:

The site is marked and posted with URM signs. It has a small amount of bunch grass vegetation growing on it. In February 2001, a posted SCA extended northward from the edge of 216-A-34 to 216-A-19. The site received cooling water from the contact condenser in the 241-A-431 building. Drawings indicate a 38 cm (15 in.) diameter clay pipe fed 216-A-34 and was connected to the headwall. Ditch effluent was routed to the 216-A-19 and 216-A-20 trenches. Maxfield (1979) describes the site as two ditches; one ditch measuring 85 m (280 ft) long and 9 m (30 ft) wide and a second ditch measuring 39.6 m (130 ft) long and 9 m (30 ft) wide. However, it is not clear if there were two ditches or actually a headwall structure and a ditch. The Maxfield ditch dimensions are similar to the headwall structure dimensions. Drawings show the headwall width was 3 m (10 ft) wide at the west end fanning out to 12 m (40 ft) wide at the east end. The headwall structure had 1:2 side slopes. The headwall structure was 39.6 m (130 ft) long. It tapered off into an open ditch. The ditch terminated in the 216-A-20 Grave. No documentation has been located to describe how the effluent was directed to the 216-A-19 Grave. Disposal at this site was terminated due to the potential for release of contamination to the environment. The pipeline to the ditch was valved out and the effluent was rerouted to the 216-A-8 Crib. The ditch was backfilled. The start date was November 1955 and the end date was December 1957.

Related Site Structure: The site is associated with the 241-A-431 building, the 216-A-19 trench and the 216-A-20 trench. The pipeline to the 216-A-34 crib is discussed in site code 200-E-166-PL.

Site Posting: SCA, URM

Release Mechanism: Cooling Water

Release Type: Liquid

Dimensions (estimated):

Site Length:	85.0 m (280.0 ft)	Site Depth:	1.8 m (6.0 ft)
Site Width:	9.1 m (30.0 ft)	Cover Thickness:	0.3-0.6 m (1-2 ft)
Site Area:	777.2 m ² (8400.4 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	U-238, the site contains less than 1 Ci total beta activity
Nonradiological	X	As, Mn

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$1,378,000**References:**

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-A-40

No Image Available

Site Name: 216-A-40 Retention Basin, 216-A-39 Crib, 216-A-39 Trench

Site Type: Retention Basin

Current OU: 200-MG-1

Facility: PUREX Area

Former OU: 200-CW-1

Waste Site Description:

The site is currently a surface-stabilized area that is posted URM. The corners are marked with concrete AC-540 markers. Some contaminated equipment is being stored on top of the backfilled basin. The equipment is posted Radioactive Material Area/Contamination Area. The site was originally an open, rubber lined trench that was divided into 3 sections. A 0.3 m (12 in.) diameter schedule 40 distribution pipe ran horizontally through the south end of the unit, 3.7 m (12 ft) below grade. Collapsible rubber bladders were utilized to contain the contaminated cooling water and steam condensate. Contaminated cooling water and steam condensate from the 244-AR Vault were diverted to the 216-A-40 Retention Basin when the effluent was above standard release limits for the water to be sent to the 216-B-3 or 216-A-25 Ponds. The retention basin bladders failed in 1979 and the unit was removed from service. Although it was not being used, it remained an open basin until 1994. The site was stabilized in 1994. Contaminated soil and the bladders were consolidated into the east end of the trench (Trench sat on an angle. Could be considered the south end or the southeast end) Contaminated soil from the adjacent Soil Contamination Area (UPR-200-E-143 and remnants of UPR-200-E-100) was also scraped into the east end of the basin. The basin was backfilled with clean material. This eastern end was posted as a URM Area. The remaining portion was released from radiological control. An employee concern was filed that indicated the waste site boundary markers on the southeast corner of the remediation area were not in the right place. After reviewing the remediation project files and interviewing employees involved with the project, a decision was made in 1999 to relocate two of the marker posts to be sure all of the underground radioactive material was properly posted. The stabilized area is smaller than the original size of the open basin.

Related Site Structure: The site is associated with the 244-AR Vault facility, UPR-200-E-143, UPR-200-E-100 and UPR-200-E-59. Pipelines associated with the basin are 200-E-274-PL and 200-E-275-PL.

Site Posting: URM, CA

Release Mechanism: Effluent Discharge

Release Type: Liquid

Dimensions (estimated):

Site Length: 122.0 m (400.0 ft)

Site Depth: 3.7 m (12.0 ft)

Site Width: 6.1 m (20.0 ft)

Cover Thickness: 0.3-0.6 m (1-2 ft)

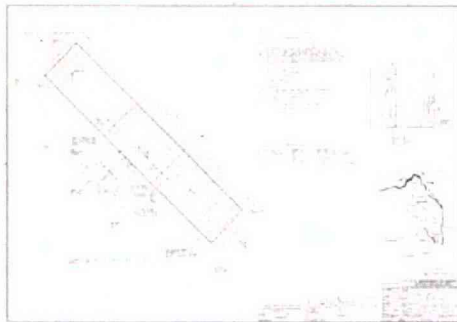
Site Area: 744.2 m² (8000.0 ft²)

Potential Contaminants:

	Type	Constituents
Radiological	X	Cs-137, Sr-90, U-238, Tc-99; rad survey reading of 50 cpm in April 1998.
Nonradiological	X	As, Cd, Pb, Hg, Se, PCB Arochlor 1254

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$1,589,000**References:**

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-A-42

Site Name: 216-A-42, 207-AA Retention Basin, 216-A-42 Trench, 216-A-42 Retention Basin

Site Type: Retention Basin

Current OU: 200-MG-1

Facility: PUREX Area

Former OU: 200-CW-1

Waste Site Description:

The site is surrounded with steel posts and chain. It is posted with Underground Radioactive Material signs. Concrete cover blocks are visible on the top of the basin. The chain link fence has been removed. The site consists of a rubber-lined trench divided into three holding basins by two internal berms. One end of the trench features the inlet structure for the 91-centimeter (36-inch) diameter cooling water line while the other end has the inlet structure for the 20.3-centimeter (8-inch) diameter steam condensate pipeline. Both lines enter at 2.9 meters (9.5 feet) below grade. Outlet drains are located at the low-points in each basin and connect to the 216-A-42A Pump Station. The capacity of the three basins is in excess of 6.1E+06 liters (1.6E+06 gallon). The trench is equipped with a float. Concrete cover blocks were installed over the basins in 1984. The 216-A-42 Retention Basin was built to hold cooling water or steam condensate that was contaminated above standard release limits and prevent its disposal to the Gable and B Pond systems or to cribs. After the retained effluent contents were analyzed, a built-in recovery system provided the capability of pumping solutions back into the PUREX facility for reprocessing (see site code 200-E-261-PL) or to cribs for disposal. Prior to the construction of the 241-AP Tank Farm (1983), the basin was connected to the 0.9 meter (36 inch) diameter corrugated metal pipeline (200-E-127-PL) that flowed to the Gable and B Ponds. A 0.3 meter (1 foot) diameter chemical sewer line (200-E-187-PL) tied the basin to the 216-A-29 ditch. Portions of the chemical sewer line and the corrugated metal pipe were removed during the 241- AP Tank Farm construction.

Related Site Structure: The basin is associated with PUREX facility effluents, 216-A-30, 216-A-37-2, 216-B-3, 216-A-25 and UPR-200-E-66. The PUREX Recycle pipeline is 200-E-261-PL.

Site Posting: URM

Release Mechanism: Steam Condensate/ Cooling Water

Release Type: Liquid

Dimensions (estimated):

Site Length: 104.0 m (342.0 ft)

Site Width: 9.1 m (30.0 ft)

Site Area: 950.6 m² (10260.0 ft²)

Site Depth: 3.9 m (13.0 ft)

Cover Thickness: 0 m (0 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Cs-137, Sr-90, U-238, Tc-99 ; Contamination levels of 40,000 cpm were found inside the fenced basin area and 3,000 cpm was found outside the fence and on the adjacent road in November 1984.
Nonradiological	X	As, Cd, Pb, Hg, Se, PCB 1254

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$4,575,000**References:**

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-A-9**Site Name:** 216-A-9, 216-A-9 Crib**Site Type:** Crib**Current OU:** 200-MG-1**Facility:** PUREX Area**Former OU:** 200-CW-1**Waste Site Description:**

The crib is a surface stabilized area, marked with light post and chain. It is posted as a URM area. The site was used for disposal of PUREX acid fractionator condensate and cooling water, the crib was also used for disposal of liquid N reactor decontamination waste. The site contains a 25 cm (10 in.) Schedule 30 steel perforated pipe, placed horizontally, 2.7 m (9 ft) below grade. The site has 1,840 m³ (65,000 ft³) of gravel fill and has been backfilled. The side slope is 2:1. The crib surpassed its capacity in 1958 and was taken out of service. In April 1966, the crib was approved for disposal of liquid N Reactor decontamination waste, that was to that was transported to the crib in tanker trucks. This process continued until October 1966. The crib was inactive until August 1969, when PUREX acid fractionator waste was again sent to the 216-A-9 crib. The site was deactivated by blanking the effluent pipeline to the unit after replacing 31 m (100 ft) of the pipeline that had failed. The effluents were rerouted to the 216-A-29 Ditch via the 202-A Building chemical sewer. The truck unloading station at this site was interim stabilized in 1991. In 1993, filters were removed from the crib risers, surveyed, and disposed of as nonradioactive waste. The crib surface was covered with 46 to 61 cm (18 to 24 in.) of uncontaminated backfill. In July 2000, the vent risers were sealed as a preventative measure for potential passive radioactive emissions.

Related Site Structure: The site is associated with PUREX processes and N Reactor liquid waste. The pipeline associated with this crib is site code 200-E-238-PL.

Site Posting: URM**Release Mechanism:** Contaminated Effluent**Release Type:** Liquid**Dimensions (estimated):**

Site Length:	128.0 m (420.0 ft)	Site Depth:	4.0 m (13.0 ft)
Site Width:	6.1 m (20.0 ft)	Cover Thickness:	0.6 m (2 ft)
Site Area:	780.8 m ² (8400.0 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Metals

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$4,374,000

References:

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-B-2-1

Site Name: 216-B-2-1, 216-B-1, B Swamp Ditch, 216-B-2, B Ditch, 216-B-2W

Site Type: Ditch

Current OU: 200-MG-1

Facility: Solid Waste Area

Former OU: 200-CW-1

Waste Site Description:

The ditch has been backfilled and surface stabilized. It is located within a larger URM area that includes the 216-B-2-1, 216-B-2-2 and 216-B-2-3 stabilized ditches. Process effluent from B-Plant was routed to the 207-B Retention Basin. Effluent was released from the 207-B Retention Basin to the 216-B-2-1 ditch that connected to the 216-B-3-1 ditch and terminated in the 216-B-3 Pond. The 216-B-2-1 ditch was closed after it was grossly contaminated by a coil leak effluent release from B-Plant in 1963 (UPR-200-E-32). PNL-6456 and DOE/RL-92-05 both state the 216-B-2-1 ditch received effluent from the 284-E powerhouse. This statement is considered to be an error. The 200 East Powerhouse ditch transported 284-E effluent to the 216-B-3 ditches. Until March 1952, the site transported steam condensate, process cooling water, and chemical sewer from 221-B waste. After March 1952, the site transported the streams identified above in addition to the 241-CR Vault cooling water. The 300 m (1000 ft) of the contaminated section of the ditch was backfilled in 1964. The remainder of the ditch was reused and became part of the 216-B-2-2 ditch. In 1970, contaminated tumbleweeds were found growing on the backfilled contaminated portion of the ditch. The ditch was covered with a plastic weed root barrier to prevent further biological intrusion and covered with a layer of sand and gravel. This was completed in the fall of 1973. Final surface stabilization of the 216-B-2 Ditches area (including 216-B-2-1, 216-B-2-2 and 216-B-2-3) was accomplished in 1987.

Related Site Structure: The ditch is associated with B-Plant, 207-B, 216-B-3-1, 216-B-3 and UPR-200-E-32. The pipelines associated with the ditch are WIDS site codes 200-E-112-PL, 200-E-188-PL and 200-E-204-PL.

Site Posting: URM

Release Mechanism: Coil Leak/ Effluent Release

Release Type: Liquid

Dimensions (estimated):

Site Length:	1067.0 m (3500.0 ft)	Site Depth:	1.8 m (6.0 ft)
Site Width:	4.5 m (15.0 ft)	Cover Thickness:	0.6 m (2 ft)
Site Area:	4801.5 m ² (52500.0 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Cs-137, Sr-90
Nonradiological	X	Ba, Pb, Hg, Ni, Ag, As

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$2,481,000

References:

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-B-2-2**Site Name:** 216-B-2-2, 216-B-2-2W, 216-B-1 Ditch**Site Type:** Ditch**Current OU:** 200-MG-1**Facility:** Solid Waste Area**Former OU:** 200-CW-1**Waste Site Description:**

The ditch has been backfilled and surface stabilized. It is located within a large Underground Radioactive Material area that includes the 216-B-2-1, 216-B-2-2 and 216-B-2-3 backfilled ditches. The individual ditches are not marked. The head end of the ditch is located near the 207-B Retention Basin. The lower end terminated near the northeast corner of the 218-E-12A Burial Ground. The site received chemical process sewer effluent from B Plant and its support facilities. The construction of the 216-B-2-2 ditch reused 762 meters (2500 feet) of the 216-B-2-1 ditch. Approximately 330 meters (1100 feet) of new ditch was dug. When active, the open ditch was 4.6 meters (15 feet) wide at the top with a side slope of 2.5:1. This unit was backfilled in 1970 due to an unplanned liquid release from B Plant. The 216-B-2-3 ditch was dug to replace the 216-B-2-2 Ditch. The ditch's radionuclide inventory is included in 216-B-3 Pond. PNL-6456 and DOE/RL-92-05 both state the 216-B-2-2 ditch received effluent from the 284-E powerhouse. This statement is considered to be an error. The 200 East Powerhouse ditch transported 284-E effluent to the 216-B-3 ditches.

Related Site Structure: The following are related to the site: 207-B, 216-B-2-1, 216-B-2-3, 216-B-3-1, 216-B-3-2, and the 216-B-3 Pond. The pipelines associated with the ditch are WIDS site codes 200-E-112-PL, 200-E-188-PL and 200-E-204-PL.

Site Posting: URM**Release Mechanism:** Contaminated Effluent**Release Type:** Liquid**Dimensions (estimated):**

Site Length:	1070.0 m (3500.0 ft)	Site Depth:	1.8 m (6.0 ft)
Site Width:	4.6 m (15.0 ft)	Cover Thickness:	0.3-0.6 m (1-2 ft)
Site Area:	4922.0 m ² (52500.0 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Cs-137, Sr-90
Nonradiological	X	Ba, Pb, Hg, Ni, Ag, As

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$2,481,000

References:

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-B-2-3

Site Name: 216-B-2-3, B Pond Ditch, B Swamp Ditch, 216-B-2-3W

Site Type: Ditch

Current OU: 200-MG-1

Facility: Solid Waste Area

Former OU: 200-CW-1

Waste Site Description:

The ditch is currently backfilled and surface stabilized. It is located inside a large URM area that includes the 216-B-2-1, 216-B-2-2 and 216-B-2-3 ditches. The ditch was used to transport liquid waste from B plant to 216-B-3 pond. The ditch was used to transport liquid waste from B-Plant to 216-B-3 Pond. It was built to replace the contaminated of 216-B-2-2 Ditch in 1970. The side slope is 2.5:1. The radionuclide inventory for the ditch is included with the 216-B-3 Pond. The unit was backfilled and the surface stabilized in 1987. The open ditch was replaced in 1987 with a 22 in diameter, polyethylene, underground pipeline (see site code 200-E-126-PL). The polyethylene pipeline was installed parallel to (and south of) the 216-B-2-3 ditch. The pipeline turns to the north and crosses the stabilized 216-B-2-2 and 216-B-2-3 ditches. It continues eastward on the north side of the backfilled ditches and connects with the previous pipeline to the 216-B-3-3 ditch.

Related Site Structure: The ditch is associated with the 207-B Retention Basin. The pipelines associated with the ditch are WIDS site codes 200-E-188-PL and 200-E-205-PL.

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length: 1219.0 m (4000.0 ft)
Site Width: 6.1 m (20.0 ft)
Site Area: 7435.9 m² (80000.0 ft²)

Site Depth: 1.8 m (6.0 ft)
Cover Thickness: 0.3-0.6 m (1-2 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Cs-137, Sr-90
Nonradiological	X	Ba, Pb, Hg, Ni, Ag, As

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$2,793,000

References:

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-B-3-1

Site Name: 216-B-3-1, B Swamp Ditch, 216-B-2, 216-B-3 Ditch, 216-B-2E

Site Type: Ditch

Facility: 200 E Ponds Area

Current OU: 200-MG-1

Former OU: 200-CW-1

Waste Site Description:

The head end is located outside the 200 East perimeter fence, east of 218-E12A Burial Ground. The ditch continues due east to the 216-B-3 Pond. It widened into a swamp before entering the 216-B-3 Pond. The site is currently backfilled and surface stabilized. It is located within a large, posted URM area that also includes the 216-B-3-2 and 216-B-3-3 backfilled ditches. The ditch received B Plant effluent from the 216-B-2-1 ditch and Purex effluent via a diverter that divided the flow between Gable Pond and B Pond. The 216-A-29 Ditch entered the B Swamp near the east end of the 216-B-3-1 Ditch. The unit was backfilled in 1964 after it was contaminated due to a release from PUREX. The 216-B-3-2 Ditch was constructed to replace the 216-B-3-1 Ditch. Until March 1962, the site percolated and transported 221-B Plant steam condensate, process cooling water, chemical sewer waste, and 284-E Powerhouse waste. From March 1952 to November 1955, the site percolated and transported the above-listed streams plus 241-CR Vault cooling water. From November 1955 to December 1957, the site percolated and transported the above-listed streams plus effluent from 216-A-29 Ditch. Wastes include 202-A process cooling water and chemical sewer waste. From December 1957 to February 1958, the site percolated and transported the above-listed streams minus 202-A process cooling water. From February 1958 to December 1962, the site percolated and transported the above-listed streams plus 202-A Acid Fractionator condensate. From December 1962 to December 1963, the site percolated and transported the above-listed streams plus 202-A seal cooling water from air sampler vacuum pumps. After December 1963, the site percolated and transported the above-listed streams minus 202-A seal cooling water. In 1971, the ground was leveled and cleaned of all foreign objects that might puncture a plastic sheet. Ten-mil thick plastic sheets were placed on a 10 cm (4 in) cushion of sand. They were overlapped 0.6 m (2 ft) to provide an effective root barrier. The sheeting was covered with 46 cm (18 in.) of sand and topped with 10 cm (4 in.) of gravel to prevent surface erosion by the wind. The entire unit was treated in this manner except the first 31 m (100 ft) at the head end near the diverter station. At the eastern end, where the unit had widened into a swamp, the treated area is approximately 31 m (100 ft) wide. The west end is approximately 9.8 m (32 ft) wide. The start date was April 1945 and the end date was July 1964.

Related Site Structure: The site is associated with B Plant and PUREX facilities, UPR-200-E-34 and 216-B-2-1.

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):**Site Length:** 975.0 m (3200.0 ft)**Site Depth:** 1.8 m (6.0 ft)**Site Width:** 11.0 m (36.0 ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)**Site Area:** 10725.0 m² (115200.0 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Cs-137 and a cooling leak in a process cooling tank in PUREX put an estimated 2,500 curies of fission products into the ditch
Nonradiological	X	As, Ba, Cd, Pb, Se, Hg, Hex Cr

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$2,086,000**References:**

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-B-3-2

No Image Available

No Image Available

Site Name: 216-B-3-2, 216-B Ditch, 216-B-1 Ditch, B Swamp Ditch, 216-B-2-2E**Site Type:** Ditch**Facility:** 200 E Ponds Area**Current OU:** 200-MG-1**Former OU:** 200-CW-1**Waste Site Description:**

The ditch has been backfilled and surface stabilized. It is located within a large URM Area that includes the 216-B-3-1, 216-B-3-2 and 216-B-3-3 covered ditches. The unit was open from the diverter station to the 216-B-3 Pond and was approximately 1.2 to 2.4 m (4 to 8 ft) deep. It was backfilled in July 1970 after a release of strontium-90 from 221-B Plant. The ditch received effluent from B Plant and PUREX and transported it to the 216-B-3 Main Pond. This ditch replaced the 216-B-3-1 Ditch after it became contaminated from an Unplanned Release in 1964. The 216-B-3-2 Ditch was backfilled due another unplanned release of radioactive liquid that occurred in 1970, which caused it to become highly contaminated. The 216-B-3-3 Ditch was constructed to replace the 216-B-3-2 Ditch. Until January 1965, the site transported 221-B Plant process cooling water, steam condensate, and chemical sewer; 241-CR Vault cooling water; 284-E Powerhouse water; and received and transported 202-A chemical sewer waste and fractionator condensate from 216-A-29 Ditch. From January 1965 to January 1966, the site transported the above mentioned streams plus 241-TY Tank Farm ITS Unit 1 condenser cooling water. From January 1966 to November 1967, the site transported the above mentioned streams plus condenser cooling water and air sampler vacuum pump seal cooling water from 202-A Building. From November 1967 to February 1968, the site transported the above mentioned streams minus 284-E Powerhouse wastewater. After February 1968, the site transported the above mentioned streams plus 241-BY Tank Farm ITS Unit 2 condenser cooling water.

Related Site Structure: The site is associated with 216-B-2-2, 216-B-3 and UPR-200-E-138.**Site Posting:** URM**Release Mechanism:** Contaminated Effluent**Release Type:** Liquid**Dimensions (estimated):**

Site Length:	1128.0 m (3700.0 ft)	Site Depth:	1.8 m (6.0 ft)
Site Width:	4.6 m (15.0 ft)	Cover Thickness:	0.3-0.6 m (1-2 ft)
Site Area:	5188.8 m ² (55500.0 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Cs-137 and in 1970 a maximum dose rate of 450 mr/hr measured at the head of the ditch.
Nonradiological	X	As, Ba, Cd, Pb, Se, Hg, Hex Cr

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$2,449,000**References:**

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-B-3-3

No Image Available

Site Name: 216-B-3-3, B Swamp Ditch, 216-B-3-3 Ditch

Site Type: Ditch

Current OU: 200-MG-1

Facility: 200 E Ponds Area

Former OU: 200-CW-1

Waste Site Description:

The ditch has been backfilled and surface stabilized. It is posted as an URM area. The ditch received chemical process water effluent from B plant and PUREX facilities. The unit was an open ditch from the diverter station to the 216-B-3 Pond. The unit was 1.2 to 2.4 m (4 to 8 ft) deep and 0.3 m (3 ft) wide at the bottom. The 216-A-29 Ditch fed into this unit approximately 305 m (1,000 ft) upstream of the 216-B-3 Pond outfall. This ditch was built to replace the contaminated 216-B-3-2 Ditch. It operated between September 1970 and May 1994. Until July 1973, the site transported and percolated 221-B cooling water, 202-A chemical sewer from the 216-A-29 Ditch, 241-BY Tank Farm ITS Units 1 and 2 cooling water, and 244-CR Vault cooling water. From July 1973 to May 1978, the site received the same as above minus ITS Units 1 and 2 cooling water. From May 1978, the site received 221-B cooling water and 202-A chemical sewer from the 216-A-29 Ditch. The ditch was decommissioned and interim stabilized in 1994, along with the 216-B-3 Main Pond and 216-B-3A Pond Lobe. Although the sites have been backfilled and stabilized, they are combined in a the RCRA Part A Permit (Section 4.2.3.5) that has not yet been closed. Therefore the ditch is classified as active.

Related Site Structure: None

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length:	1127.8 m (3700.2 ft)	Site Depth:	1.8 m (6.0 ft)
Site Width:	6.0 m (20.0 ft)	Cover Thickness:	0 m (0 ft)
Site Area:	6766.6 m ² (74003.6 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Cs-137
Nonradiological	X	As, Ba, Cd, Pb, Se, Hg, Hex Cr

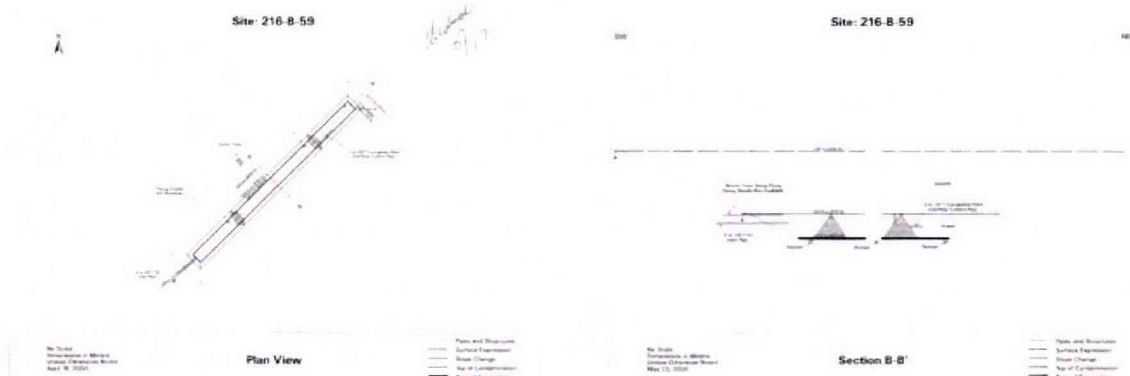
Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$1,828,000

References:

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-B-59



Site Name: 216-B-59, 216-B-58 Trench, 216-B-58 Ditch

Site Type: Trench

Current OU: 200-MG-1

Facility: B Plant Area

Former OU: 200-CW-1

Waste Site Description:

The original 216-B-59 was an unlined trench. The site was upgraded to a retention basin in 1974 (see 216-B-59B). The trench was upgraded to a retention basin by adding a hypalon liner and changing its identification number to 216-B-59B. The lined retention basin was constructed over top of the unlined 216-B-59 trench. There are currently no visual features remaining of the unlined trench. The concrete-lined basin is enclosed by a 2 m (6 ft) chain link fence. The site was used as an emergency cooling water diversion for 221-B water with radionuclide concentrations above those allowed for existing ponds. The site was activated in 1967 and received only a single discharge of approximately 477,000 L (126,000 gal) of waste in March 1968. It was later upgraded again (in 1983) by replacing the hypalon liner with a concrete liner and cover. The site name 216-B-59 is often used to refer to the present concrete, haplon lined retention basin that is officially named the 216-B-59B basin.

Related Site Structure: This site is associated with 216-B-59B and the 221-B Facility. The pipeline that fed the site is 200-E-277-PL.

Site Posting: Not Specified

Release Mechanism: Cooling Water

Release Type: Liquid

Dimensions (estimated):

Site Length:	122.0 m (400.0 ft)	Site Depth:	3.7 m (12.0 ft)
Site Width:	6.1 m (20.0 ft)	Cover Thickness:	0.3-0.6 m (1-2 ft)
Site Area:	744.2 m ² (8000.0 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$2,278,000

References:

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-B-59B

No Image Available

Site Name: 216-B-59B, 216-B-59 Retention Basin**Site Type:** Retention Basin**Current OU:** 200-MG-1**Facility:** B Plant Area**Former OU:** 200-CW-1**Waste Site Description:**

The site is a concrete structure enclosed by a six foot (2 meter) chain link fence. The site was used as an emergency cooling water diversion for 221-B water with radionuclide concentrations above those allowed for existing ponds. It was upgraded to a retention basin in 1974. The 216-B-59B retention basin was designed to receive diverted 221-B Building cooling water that contained radionuclide concentrations above the limits allowed for disposal in the B Pond system. The diverted waste was pumped back into 221-B to be reprocessed. In 1974, the 216-B-59 unlined trench was upgraded to a Retention Basin by adding a hypalon liner and changing its identification number to 216-B-59B. The haplon liner was replaced, in 1983, with a concrete liner and cover. The lined retention basin was placed on top of the unlined 216-B-59 trench. The site name 216-B-59 is often used to refer to the present concrete, haplon lined retention basin that is officially named the 216-B-59B basin.

Related Site Structure: The 216-B-59B Retention Basin is associated with the 216-B-59 trench and the 221-B Facility. The pipeline that fed the site is 200-E-277-PL.

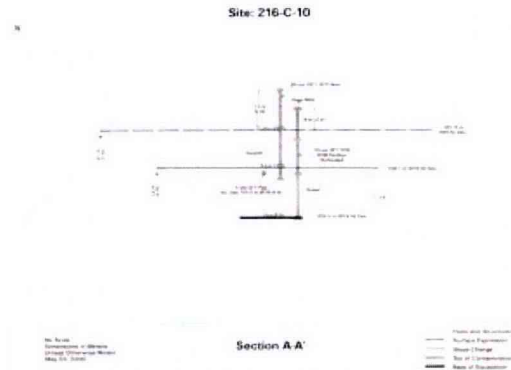
Site Posting: Not Specified**Release Mechanism:** Cooling Water**Release Type:** Liquid**Dimensions (estimated):****Site Length:** 93.5 m (307.0 ft)**Site Width:** 16.0 m (52.0 ft)**Site Area:** 1496.0 m² (15964.0 ft²)**Site Depth:** 3.0 m (10.0 ft)**Cover Thickness:** 0 m (0 ft)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Cs-137, Sr-90, U-238, Tc-99
Nonradiological	X	As, Cd, Pb, Hg, Se, PCB 1254

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$2,278,000

References:

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-C-10**Site Name:** 216-C-10, 216-C-10 Crib**Site Type:** Crib**Current OU:** 200-MG-1**Facility:** Semi-Works Area**Former OU:** 200-PW-4**Waste Site Description:**

The site is marked with concrete AC-540 markers and URM signs. The surface is covered with gravel. The crib received process condensate from the 201-C building by a 7.6 cm (3 in.) diameter stainless steel pipe, located horizontally, 1.2 m (4 ft) below grade. The site slope is 1:1.5. The site contains 48 m³ (1,700 ft³) of gravel fill and has been backfilled with dirt. The crib start date was November 1964 and the end date was October 1969.

Related Site Structure: The site is associated with the 201-C Facility and the 200-E-157-PL Pipeline.**Site Posting:** URM**Release Mechanism:** Process Condensate**Release Type:** Liquid**Dimensions (estimated):****Site Length:** 16.2 m (53.0 ft)**Site Depth:** 2.4 m (8.0 ft)**Site Width:** 7.9 m (26.0 ft)**Cover Thickness:** 0.3-0.6 m (1-2 ft)**Site Area:** 128.0 m² (1378.0 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$180,000**References:**

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-C-3

Site Name: 216-C-3, 201-C Leaching Pit, 216-C-3 Crib

Site Type: Crib

Current OU: 200-MG-1

Facility: Semi-Works Area

Former OU: 200-PW-4

Waste Site Description:

The crib is identified with a single AC-540 concrete marker post. The site is located inside a larger posted URM area known as 200-E-41 (Strontium Semi-works Stabilized Area). The site consists of 10 cm (4 in) pipes resting on a gravel bed creating a drain field type crib. The crib received acidic process wastes from the 201-C, 215-C, and 271-C buildings. The crib was deactivated by blanking the inlet pipeline and backfilling the excavation with sand and gravel. When the 216-C-3 leaching pit was blanked, the effluent was diverted to the 216-C-9 excavation. When the specific retention capacity of the unit was reached, the site was deactivated by blanking off the pipeline to the unit and backfilling the excavation. In 1979, the surfaces of the 216-C-1, 216-C-3, 216-C-4, and 216-C-5 Crib were stabilized against wind erosion and plant root invasion. The top 10 cm (4 in.) of the crib surfaces were bladed off and the soil deposited in a depression on the 216-C-1 Crib; the ground was covered with a 10 cm (4 in.) sand pad; ureabor herbicide was applied at the rate of 450 kg/ha (500 lbs/ac); 10 mil plastic sheeting was installed over the entire area; a 31 cm (12 in.) pad of sand was installed over the plastic; and the surface was stabilized with 10 cm (4 in.) of pit run gravel.

Related Site Structure: The site is associated with the 201-C, 215-C and 271-C facility operations. The pipeline associated with this crib is site code 200-E-169-PL.

Site Posting: URM

Release Mechanism: Process Condensate

Release Type: Liquid

Dimensions (estimated):

Site Length:	21.4 m (70.1 ft)	Site Depth:	3.1 m (10.0 ft)
Site Width:	12.8 m (42.0 ft)	Cover Thickness:	0.3 m (1 ft)
Site Area:	273.9 m ² (2944.2 ft ²)		

Potential Contaminants:

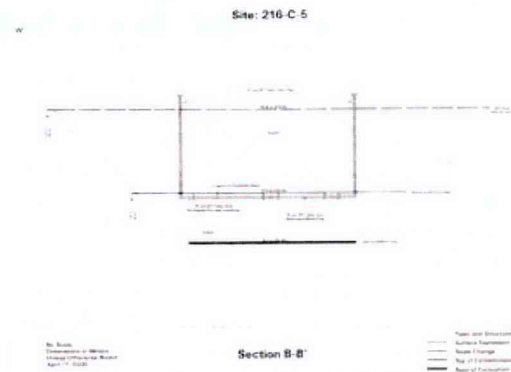
	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$497,000

References:

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-C-5**Site Name:** 216-C-5, 216-C-5 Crib**Site Type:** Crib**Current OU:** 200-MG-1**Facility:** Semi-Works Area**Former OU:** 200-PW-4**Waste Site Description:**

The crib is marked with concrete AC-540 markers and URM signs. It is located within the larger, surface stabilized area known as 200-E-41. The crib received 201-C high salt waste. The crib received 201-C "high salt waste" cold run waste via a 15-cm (6-in.) diameter galvanized, corrugated, perforated piping placed horizontally at 3.4 m (11 ft) below grade. Two 6.1 m (20 ft) lengths are placed perpendicularly to the inlet pipe, forming an H pattern. The side slope is 1:1. The site contains approximately 1.8 m (6 ft) or 74 m³ (2,600 ft³) of gravel fill and has been backfilled. The waste release point is 1.5 m (5 ft) from the site bottom. The site was deactivated in 1955 by valving out the effluent pipeline when the specific retention capacity was reached. The crib start date was March 1955 and the end date was June 1955.

Related Site Structure: The crib is associated with the 201-C Facility, 241-CX-71 and 200-E-41. The pipeline associated with this crib is site code 200-E-173-PL.

Site Posting: URM**Release Mechanism:** Process Condensate**Release Type:** Liquid**Dimensions (estimated):**

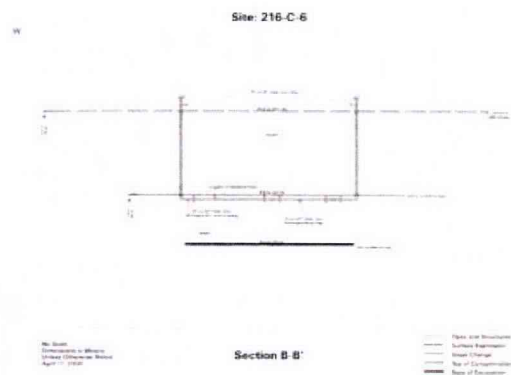
Site Length:	15.8 m (52.0 ft)	Site Depth:	4.9 m (16.0 ft)
Site Width:	12.8 m (42.0 ft)	Cover Thickness:	0.3 m (1 ft)
Site Area:	202.2 m ² (2184.0 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$180,000**References:**

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-C-6

Site Name: 216-C-6, 241-CX Crib
Site Type: Crib
Current OU: 200-MG-1

Facility: Semi-Works Area
Former OU: 200-PW-5

Waste Site Description:

The crib is covered with gravel and marked with cement posts on the four corners. It is posted with URM signs. The crib received radioactive REDOX and PUREX type process condensate. The unit is constructed of 15 cm (6 in.) diameter galvanized, corrugated, perforated piping placed horizontally at 3.4 m (11 ft) below grade. Two 6.1 m (20 ft) lengths are placed perpendicularly to the inlet pipe, forming an H pattern. The side slope is 1:1. The site contains approximately 1.8 m (6 ft) or 74 m³ (2,600 ft³) of gravel fill and has been backfilled. The waste release point is 1.5 m (5 ft) from the site bottom. The crib received radioactive REDOX and PUREX type process condensate from 201-C and 241-CX vault floor drainage. The site was deactivated by blanking the pipelines to the 241-CX area and use of the 241-CX Vault was discontinued. The start date was September 1955 and the end date was September 1964.

Related Site Structure: The site is associated with the 241-CX Vault and the 241-CX-72 crib. The pipeline associated with this crib is 200-E-171-PL.

Site Posting: URM

Release Mechanism: Process Condensate

Release Type: Liquid

Dimensions (estimated):

Site Length:	15.8 m (52.0 ft)	Site Depth:	4.9 m (16.0 ft)
Site Width:	12.8 m (42.0 ft)	Cover Thickness:	0 m (0 ft)
Site Area:	202.2 m ² (2184.0 ft ²)		

Potential Contaminants:

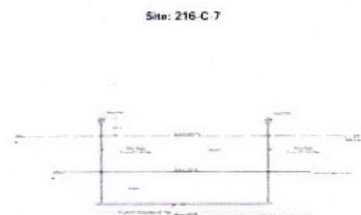
	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$180,000

References:

WIDS General Summary Report, DOE/RL-2003-64, DOE/RL-2002-42

216-C-7

No Image Available

Site Name: 216-C-7, 216-C-7 Crib**Site Type:** Crib**Current OU:** 200-MG-1**Facility:** Semi-Works Area**Former OU:** 200-PW-4**Waste Site Description:**

The site is surrounded by steel post and chain. It is posted with URM signs. The crib received radioactive liquid waste from the 209-E Critical Mass Laboratory. The crib received radioactive liquid waste from the 209-E Critical Mass Laboratory via 5 cm (2 in.) diameter steel pipeline that connected to a 0.15 m (6 in.) diameter, perforated vitrified clay distribution pipe, placed horizontally 3 m (9 ft) below grade. Two lengths of clay pipe are placed perpendicularly to the first, forming an H pattern. The site contains 123 m³ (4,100 ft³) of gravel fill and has been backfilled. The crib was placed on standby in 1983. The 209-E floor drains and a 5 cm (2 in.) diameter drain pipe were sealed in 1984.

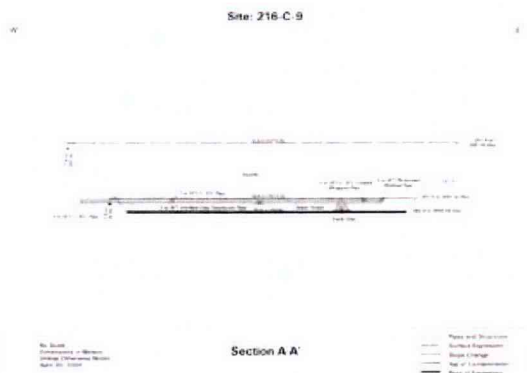
Related Site Structure: The crib is associated with 209-E-WS-3. The pipeline associated with this crib is site code 200-E-172-PL.

Site Posting: URM**Release Mechanism:** Contaminated Effluent**Release Type:** Liquid**Dimensions (estimated):****Site Length:** 13.7 m (45.0 ft)**Site Depth:** 3.7 m (12.0 ft)**Site Width:** 15.2 m (50.0 ft)**Cover Thickness:** 0 m (0 ft)**Site Area:** 208.2 m² (2250.0 ft²)**Potential Contaminants:**

	Type	Constituents
Radiological	X	Plutonium, Uranium
Nonradiological	X	Nitric acid, boron, Cd, gadolinium

Preferred Removal Action: RTD**Estimated Removal Action Present Worth:** \$516,000**References:**

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-C-9

Site Name: 216-C-9, 216-C-9 Pond, 216-C-7 Swamp, Former 221-C Canyon Excavation, 216-C-9 Swamp, Semi-Works Swamp, 216-C-9 C Canyon Excavation Semiworks Swamp

Site Type: Pond

Facility: Semi-Works Area

Current OU: 200-MG-1

Former OU: 200-CW-1

Waste Site Description:

The entire site is currently backfilled and surface stabilized. It is posted as an URM area. The solid waste burial portion of the site is not separately marked or posted from the liquid waste portion of the site. Originally received cooling water from the semiworks facility. In 1985 it was used as a solid waste burial ground. The 221-C facility excavation was divided into sections with dikes. Piping was arranged to provide three discharge points, one to each section. The excavation was originally intended to be the foundation for the 221-C Canyon Facility that was never built. It was modified to receive cooling water from the 201-C Semiworks Facility. The Hot Semiworks ceased operation in 1967 and remained in a standby mode until 1983. During that time the pond decreased in size until it was only a small marshy area in the excavation bottom. No radioactivity was identified along the swamp perimeter in a radiological survey performed in 1978. The pond area was backfilled with approximately 0.9 m (3 ft) of washed gravel. The Semiworks facility decommissioning began in 1983. In December 1985, the east end of the dried pond excavation began to be used as a solid waste burial ground for waste associated with the Semiworks decommissioning (refer to waste site 218-C-9). All liquid discharge pipes were isolated. The entire area was backfilled to grade and surface stabilized in 1989. The start date was June 1953.

Related Site Structure: Pipelines that fed the 216-C-9 Pond are site codes 200-E-254-PL, 200-E-255-PL, 200-E-256-PL, 200-E-257-PL, 200-E-258-PL and 200-E-259-PL.

Site Posting: URM

Release Mechanism: Cooling Water/ Solid Waste Burial

Release Type: Solid and Liquid

Dimensions (estimated):

Site Length: 383.0 m (1257.0 ft)

Site Depth: 2.4 m (8.0 ft)

Site Width: 70.0 m (230.0 ft)

Cover Thickness: 0.9 m (3 ft)

Site Area: 26810.0 m² (289110.0 ft²)

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$1,137,000

References:

WIDS General Summary Report, DOE/RL-99-07, DOE/RL-2002-69, DOE/RL-2000-35

216-S-16D

Site: 216 S-16D



Site Name: 216-S-16D, 202-S Swamp (New) and Ditch, 202-S Swamp #1, REDOX Pond #2, 216-S-24 Ditch
Site Type: Ditch
Current OU: 200-MG-2
Facility: 200 W Ponds Area
Former OU: 200-CW-2

Waste Site Description:

The open ditch began 835 m (2736 ft) southwest of the southwest corner of the 200 West Area perimeter fence, terminating at the eastern edge of the 216-S-16 Pond. The site is a ditch that connected the 202-S Building to the 216-S-16 Pond. The side slope of the open ditch was 2:1. It is posted with URM signs. January 1957 is considered the most accurate start date for this site which received process cooling water and steam condensate from 202-S Building (REDOX) until June 1967. After the REDOX was put on standby in July 1967, the site received condenser and vessel cooling water from concentrator boil-down operations in the 202-S Building. In 1973, the 216-U-9 ditch was connected to the 216-S-16 ditch to allow the 216-U-10 pond overflow to reach the 216-S-16 pond. Prior to reaching the open ditch, the effluent was transported via an underground, 60 cm (24 in.) vitrified clay pipeline.

Related Site Structure: The site is associate with the REDOX facility, the 216-S-16 Pond, and the 216-U-9 Ditch. The pipeline to the 216-S-16 ditch is discussed in site code 200-W-155-PL.

Site Posting: URM

Release Mechanism: Contaminated effluent

Release Type: Liquid

Dimensions (estimated):

Site Length:	518.2 m (1700.1 ft)	Site Depth:	0.9 m (3.0 ft)
Site Width:	1.2 m (4.0 ft)	Cover Thickness:	0.3-0.6 m (1-2 ft)
Site Area:	631.7 m ² (6800.7 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	Unknown	Unknown

Preferred Removal Action: CS/NA

Estimated Removal Action Present Worth: 167,966

References:

WIDS General Summary Report, DOE/RL-99-66, DOE/RL-2004-24, DOE/RL-2003-11

216-S-19



Site Name: 216-S-19, 222-S Lab Swamp, 216-SL-1, REDOX Lab Swamp, 216-S-19 Pond

Site Type: Pond

Current OU: 200-MG-1

Facility: 200 W Ponds Area

Former OU: 200-LW-2

Waste Site Description:

The pond was opened in February 1952 and closed in October 1984. Until December 1954, the site received effluent from the 222-S/SA Laboratory ventilation cooling water and miscellaneous wastes from laboratory hoods and decontamination sinks via the 207-SL Retention Basin. From December 1954 to October 1955, the site was inactive because the radionuclide concentration in the 207-SL Retention Basin liquid waste was above the prescribed disposal guidelines, and building effluents were rerouted to the 216-S-20 Crib. From October 1955 to October 1984, the site received ventilation cooling water and miscellaneous wastes from laboratory hoods and decontamination sinks in the 222-S Laboratory Building via the 207-SL Retention Basin.

Related Site Structure: The associated structures are the 222-S Building, 207-SL Retention Basin and pipeline site code 200-W-147-PL.

Site Posting: URM

Release Mechanism: Liquid disposal

Release Type: Liquid

Dimensions (estimated):

Site Length: Irregular m (Irregular ft)

Site Width: Irregular m (Irregular ft)

Site Area: 322.3 m² (3,495.0 ft²)

Site Depth: Unknown m (Unknown ft)

Cover 0.3-0.6 m (1.0-2.0 ft)

Thickness:

Potential Contaminants:

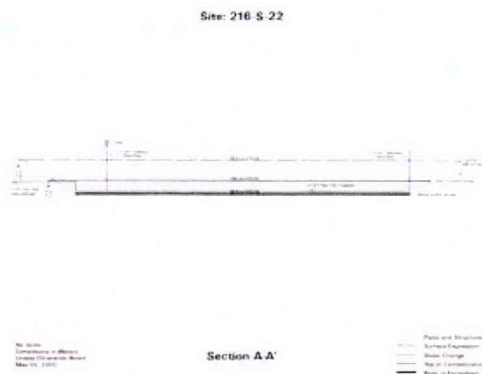
	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown

Preferred Removal Action: CS/NFA

Estimated Removal Action Present Worth: \$878,000

References:

WIDS General Summary Report, DOE/RL-2006-56, DOE/RL-2005-61

216-S-22**Site Name:** 216-S-22, 216-S-22 Crib**Site Type:** Crib**Current OU:** 200-MG-1**Facility:** REDOX Area**Former OU:** 200-PW-4**Waste Site Description:**

The crib is marked and posted with URM signs. The site provided subsurface liquid disposal for the 293-S Building waste. The crib is a gravel structure with a side slope of 1:1.5. A pipe enters the unit below grade, branches out at right angles downwards to the bottom, and runs along the bottom for the length of the unit. The section of pipe along the crib bottom has open joints. The rest of structure is filled with backfill (see site code 200-W-146 PL). The site was retired when production operations were shut down at REDOX. The site operated from October 1957 to June 1967.

Related Site Structure: The structure is associated with the 293-S Building. The crib pipeline is WIDS site code 200-W-146 PL.

Site Posting: URM

Release Mechanism: The site provided subsurface liquid disposal for the 293-S building waste

Release Type: Liquid**Dimensions (estimated):**

Site Length:	39.6 m (130.0 ft)	Site Depth:	3.0 m (10.0 ft)
Site Width:	10.2 m (33.5 ft)	Cover Thickness:	0 m (0 ft)
Site Area:	403.9 m ² (4615.0 ft ²)		

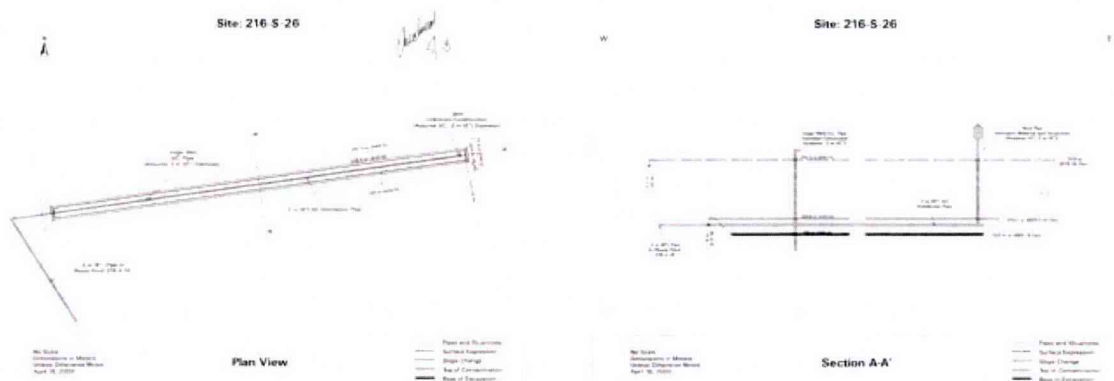
Potential Contaminants:

	Type	Constituents
Radiological	X	Tc-99, Sr-90, H3, U-238
Nonradiological	X	Ag, As, Hg, NO3, Hex Cr

Preferred Removal Action: CS-NA**Estimated Removal Action Present Worth:** \$180,000**References:**

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-S-26



Site Name: 216-S-26, 216-S-19 Replacement Facility, 216-S-26 Crib

Site Type: Crib

Current OU: 200-MG-1

Facility: 200 W Ponds Area

Former OU: 200-LW-2

Waste Site Description:

The crib is surrounded with metal posts and chain and is posted with Underground Radioactive Material signs. A 15 centimeter (6 inch) vitrified clay, perforated distribution pipe runs the length of the unit, 46 centimeters (18 inches) above the bottom of the crib. Eight centimeters (4 inches) of gravel covers a membrane barrier. The crib is filled with 2.9 meters (9.5 feet) of soil. One gage well with a liquid level indicator is located 100 ft (30 m) from the west end, and a vent riser is located at the east end. The crib received waste from the 222-S laboratory via the 207-SL retention basin. In 1988, crib infiltration rate problems were noted due to caustic flush water being periodically disposed to the 207-SL basin.

Related Site Structure: The pipeline associated with this crib is WIDS site code 200-W-148-PL.

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length:	135.5 m (444.0 ft)	Site Depth:	3.7 m (12.0 ft)
Site Width:	10.4 m (34.0 ft)	Cover Thickness:	0 m (0 ft)
Site Area:	1409.2 m ² (15096.0 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Sr-90, Tc-99, H3, U-238
Nonradiological	None	As, Hex Cr, Pb

Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$983,000

References:

WIDS General Summary Report, DOE/RL-2001-66, DOE/RL-2006-56, DOE/RL-2005-61

216-S-4

Site Name: 216-S-4, 216-S-7, 216-S-4 Sump or Crib, UN-216-W-1

Site Type: French Drain

Current OU: 200-MG-1

Facility: 200 W Ponds Area

Former OU: 200-PW-4

Waste Site Description:

The site is marked and posted with URM signs. The site is constructed of two vertically buried metal culvert pipes. The site is constructed of two rock-filled, 6.1 m (20 ft) long metal culverts, connected in parallel. The site received liquid from the 241-S-101 and 241-S-104 tank condensers via an aboveground pipe. The site operated from August 1953 to August 1956. The site was retired when the 241-S Tank air condensers were reactivated. The site was deactivated by removing the above-ground piping in the tank farm to the units.

Related Site Structure: The site is associated with the condensers on the 241-S-101 and 241-S-104 Tanks located inside the 241-S Tank Farm.

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length:	None m (None ft)	Site Depth:	6.6 m (21.8 ft)
Site Width:	0.9 m (2.5 ft)	Cover Thickness:	0.3-0.6 m (1-2 ft)
Site Area:	1.0 m ² (10.8 ft ²)		

Potential Contaminants:

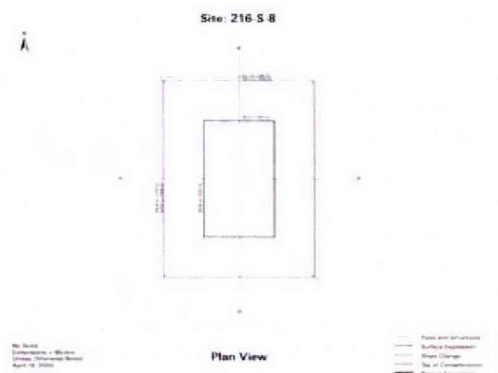
	Type	Constituents
Radiological	X	Tc-99, Sr-90, H3, U-238
Nonradiological	X	Ag, As, Hg, NO3, Hex Cr

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$180,000

References:

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-S-8

Site Name: 216-S-8, Cold Aqueous Trench, Cold Aqueous Crib, 216-S-3, Unirradiated Uranium Waste Trench, Cold Aqueous Grave

Site Type: Trench

Current OU: 200-MG-1

Facility: REDOX Area

Former OU: 200-PW-2

Waste Site Description:

The site consists of one trench that has been backfilled to grade. It is marked and posted with URM signs. This site received start up waste from the 202-S building. The site was a single use trench that received unirradiated uranium start-up waste from the 202-S Building. The site was retired when the discharge of start-up waste to the unit was completed. The site was deactivated by removing the above-ground piping and backfilling the unit. The unit operated from November 1951 to February 1952.

Related Site Structure: The associated structure is the 202-S Building.

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length: 30.5 m (100.0 ft)

Site Depth: 7.6 m (25.0 ft)

Site Width: 18.3 m (60.0 ft)

Cover Thickness: 0.3-0.6 m (1-2 ft)

Site Area: 558.2 m² (6000.0 ft²)

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Uranium

Preferred Removal Action: CS-NA

Estimated Removal Action Present Worth: \$180,000

References:

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-T-20

Site Name: 216-T-20, 216-TX-2, 216-T-20 Crib, 241-TX-155 Contaminated Acid Grave

Site Type: Trench

Current OU: 200-MG-1

Facility: T Farm Area

Former OU: 200-PW-4

Waste Site Description:

The site has a small concrete block structure on the surface with a metal lid labeled Confined Space and Potential Internal Contamination. There is a single concrete marker with an URM sign on it. The concrete block structure is surrounded with the same type of cobbles that surround the powerhouse pond. A single use pit dug specifically to receive acidic waste from the diversion box. The site also holds a small concrete block structure labeled possible internal contamination. The historical documentation describes the site as an excavation, similar to a pit. It was a single use pit dug specifically to receive contaminated acid from the 241-TX-155 Diversion Box. There is no mention of the concrete block access structure currently located at the site.

Related Site Structure: The site is associated with the 241-TX-155 Diversion Box.

Site Posting: URM

Release Mechanism: Contaminated Effluent

Release Type: Liquid

Dimensions (estimated):

Site Length:	6.7 m (22.0 ft)	Site Depth:	1.2 m (4.0 ft)
Site Width:	6.7 m (22.0 ft)	Cover Thickness:	0 m (0 ft)
Site Area:	44.9 m ² (484.0 ft ²)		

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown, Nitric acid

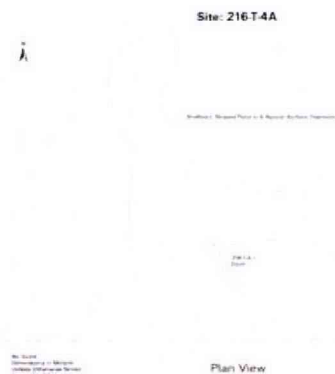
Preferred Removal Action: RTD

Estimated Removal Action Present Worth: \$163,000

References:

WIDS General Summary Report, DOE/RL-2000-60, DOE/RL-2004-85, DOE/RL-2004-25

216-T-4A



Site Name: 216-T-4A, 216-T-4 Swamp, 216-T-4-1 (P), 216-T-4-1 Pond

Site Type: Pond

Current OU: 200-MG-1

Facility: WM Area

Former OU: 200-CW-4

Waste Site Description:

The pond was located in a natural surface depression forming an L-shaped shallow pond covering approximately 6.5 hectares (16 acres). The pond is no longer visible. It was exhumed in 1972 to make room for the expansion of the 216-W-2A Burial Ground. The pond received cooling water and steam condensate from the retention basin and 221-T and 224-T. The pond received cooling water and steam condensate from 221-T and 224-T via the 207-T Retention Basin and the 216-T-4-1 Ditch. The pond became active in November 1944 with the startup of the 221-T Chemical Separation Plant. The waste water in the ditch flowed through a culvert that went under the 218-W-2A Burial Ground railroad spur and then ran into a shallow ditch cut to a natural surface depression in the desert floor. The pond no longer exists. The entire surface of the bottom of the original pond (216-T-4A) was scraped to a depth of 15 to 23 cm (6 to 9 in.) and placed in the 218-W-2A Burial Ground (Trench #27). The scraped area was covered with clean soil in February 1973. In April 1973, 20,000 m² (5 ac) of the scraped pond bottom were seeded with Siberian Wheat Grass to help stabilize the ground surface. In May 1972, an earthen dike was built to separate the replacement pond area (216-T-4B) from the 218-W-2A Burial Ground expansion. The official name 216-T-4A was established by the Facilities and Industrial Engineering Group in 1983.

Related Site Structure: The site is associated with the 216-T-4-1 Ditch and the 218-W-2A Burial Ground.

Site Posting: None

Release Mechanism: Steam Condensate/ Cooling Water

Release Type: Liquid

Dimensions (estimated):

Site Length: 548.6 m (1800.1 ft)

Site Width: 182.9 m (600.0 ft)

Site Area: 100335.3 m² (1080105.4 ft²)

Site Depth: 0.0 m (0.0 ft)

Cover Thickness: 0.6 m (2 ft)

Potential Contaminants:

	Type	Constituents
Radiological	X	Unknown
Nonradiological	X	Unknown